LONG-TERM STEWARDSHIP CALCULATOR:

ACCOMPANYING HANDBOOK

The Nature Conservancy

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COVER PHOTO: Monitoring river flow in the lower San Pedro River Preserve, Arizona. © Kay Fagan

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DEFINITIONS

Compensatory mitigation: The restoration, enhancement, creation, and/or, in certain circumstances, preservation of aquatic resources or species for the purposes of offsetting unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization have been achieved.[1]

Conservation easement: A legal agreement between a landowner and a qualified organization that restricts future activities on the land to protect its conservation values. A conservation easement may be known as a conservation servitude or conservation restriction, depending on state law.[2]

Easement enforcement (or defense): Actions taken by an easement holder to uphold the easement when it is violated, including, for example, legal action and restoration of conservation values.[3]

Easement holder: Land trust, nonprofit conservation organization, or government agency that holds a conservation easement on a property.

Easement stewardship: All aspects of an easement holder's management of a conservation easement after its acquisition, including monitoring; landowner relations; recordkeeping; processing landowner notices, requests for approval, and amendments; managing stewardship funds; and enforcement and defense.[4]

Fee properties: Land owned outright by a land trust or other conservation organization. Also referred to as fee-owned property, fee land, fee simple ownership, or property owned in fee.

Internally designated funds: Unrestricted funds that are directed to a certain purpose, as determined by a vote of the board of directors. This designation can be revoked by a similar vote of the board, unlike funds restricted by a donor. Also referred to as internally restricted or board-designated funds.[5]

Investment policy statement: Prepared by the manager of the stewardship fund or endowment to describe the purpose of the fund, its duration, who has responsibility for investment decisions, the target return rate for the pooled investments before and after inflation, the overall investment strategies including allocation of assets, the degree of risk considered acceptable, and rate of spending.[6]

Land steward: General reference to a land trust or other nonprofit conservation organization or private land manager responsible for easement and fee land stewardship or long-term management or both. Used interchangeably with long-term steward.[7]

Legal defense fund (also known as enforcement fund): A separate, dedicated fund established to support the costs of legal defense of easements and/or fee properties. Usually both principal and interest may be withdrawn if needed. Usually these funds are only used when major, expensive enforcement actions are required and are in addition to a dedicated stewardship fund or endowment.[8]

Long-term manager: Specific reference to the land trust, nonprofit conservation organization, or private land manager responsible for long-term management and maintenance.[9]

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1 Environmental Law Institute (ELI). 2012. Wetland and Stream Mitigation: A Handbook for Land Trusts. Washington, DC. 122 pp.
2 Rowley, E. and K. Sohl. 2010. Financial Management of Land Trusts. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance.
3 Doscher, P., B. Lind, E. Sturgis and C. West. 2007. Determining Stewardship Costs and Raising and Managing Dedicated Funds. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance.
4 Ibid.
5 Rowley & Sohl 2010.
6 Griswold, J. S. and W. F. Jarvis. 2011. The Investment Policy Statement. Commonfund Institute, Wilton, CT. 45pp. www.commonfund.org/2011/08/15/the-investment-policy-statement/
7 ELI 2012.
8 Doscher et al. 2007.
9 ELI 2012.

Long-term management: Activities related to management of a compensatory mitigation site after performance standards have been met. The 2008 Mitigation Rule refers broadly to *long-term management* and the regulatory community tends to prefer this term over *long-term stewardship*. The two terms are used interchangeably here. Also referred to as long-term management and maintenance.

Long-term management plan: The plan that outlines how the compensatory mitigation project will be managed after performance standards are met to ensure the long-term sustainability of the resource. The plan includes information on the long-term financing mechanism and the party responsible for long-term management.[10] For voluntary conservation properties, the plan guides ecological management to meet stated conservation goals, identifying threats and management protocols. In both cases, specific tasks are outlined in the long-term management plan, or LTMP.

Long-term steward: General reference to a land trust or other nonprofit conservation organization or private land manager responsible for easement and fee land stewardship or long-term management or both. Used interchangeably with land steward.[11]

Long-term stewardship: The ongoing responsibility to supervise and maintain lands either owned in fee or protected by a conservation easement. The conservation community tends to prefer this term over *long-term management*. The two terms are used interchangeably here.

Mitigation endowment: A separate, dedicated fund held as a trust asset by a land trust or other nonprofit conservation organization, the management and spending of which is governed by the permit or regulatory regime pursuant to which the fund was exacted and/or the terms of an agreement with the applicable permitting agency. As with true charitable endowments under current law (most notably the Uniform Prudent Management of Institutional Funds Act, or "UPMIFA"), the principal as well as the earnings of the mitigation endowment may be made available for disbursement.[12]

Regulatory exactions: Funds set aside as a result of regulatory obligations, in this case referring to funds for long-term stewardship of compensatory mitigation projects.[13]

Restricted funds: Donations or grants that are given to a land trust or other nonprofit conservation organization for a specific purpose, often with reporting requirements to the grantor.[14]

Reserved rights: The rights to use or develop the property reserved by the landowner under the terms of the conservation easement. The term can also include a reference to activities permitted on a property, and to the rights reserved to use the land for agricultural, forestry, or other working lands purposes.[15]

Stewardship fund: A separate, dedicated fund established to provide financial resources for stewardship costs. A stewardship fund may take the form of a mitigation endowment (to hold permit-exacted long-term stewardship funds) or a true charitable endowment (to hold contributions designated as restricted net assets to provide funding for long-term stewardship).

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[10] Ibid.
[11] Ibid.
[12] Gary, S.N. 2007. Charities, Endowments, and Donor Intent: The Uniform Prudent Management of Institutional Funds Act. Ga. L. Rev., 41, p. 1277.
[13] Owley, J. 2012. Exacting Conservation Easements in California. Environmental Law News. Vol. 21 (1): 3-9; SUNY Buffalo Legal Studies Research Paper No. 2013-006. Available at http://ssrn.com/abstract=2030367.
[14] Doscher et al. 2007.
[15] Vermont Law School Land Use Institute & Land Trust Alliance. 2013. Practical Pointers for Land Trusts When Facing a Lawsuit or Other Legal Challenge of *Any* Size.

Stewardship fund policy: A board-approved document that articulates the land steward's philosophy toward land and/or easement stewardship and describes how funds for stewardship will be raised, managed and expended.[16]

Stewardship start-up activities: Typically one-time activities necessary to get a preserve up and running after acquisition, such as boundary posting, fence installation, parking area construction and building removal. Such activities are not considered part of long-term stewardship and their associated costs are accounted for separately.

True charitable endowment: A separate, dedicated fund held as a permanently restricted net asset by a land trust or other nonprofit conservation organization, the management and spending of which is governed by UPMIFA. The principal as well as the earnings of the endowment may be made available for disbursement.[17]

Unrestricted funds: Donations made to a land trust or other nonprofit conservation organization, use of which is not restricted by donors, even though their use may be limited in other respects such as through board designation.[18]

Voluntary conservation property: A site where restoration or conservation activities were completed voluntarily and not to meet a regulatory obligation.

[16] Doscher et al. 2007.
[17] Gary 2007.
[18] Doscher et al. 2007.

ACRONYMS

ACEP	Agricultural Conservation Easement Program
CE	Conservation easement
ELI	Environmental Law Institute
EQIP	Environmental Quality Incentives Program
HUC	Hydrologic Unit Code
ILF	In-lieu fee program
LTA	Land Trust Alliance ("Alliance")
LTAC	Land Trust Accreditation Commission
LTMP	Long-term Management Plan
NAWCA	North American Wetlands Conservation Act
NFWF	National Fish and Wildlife Foundation
NICRA	Negotiated Indirect Cost Rate Agreement
NRCS	Natural Resources Conservation Service
PPE	Personal protective equipment
RIBITS	Regulatory In-lieu fee and Bank Information Tracking System
TNC	The Nature Conservancy ("Conservancy")
UAV	Unmanned aerial vehicle
UPMIFA	Uniform Prudent Management of Institutional Funds Act
USACE	U.S. Army Corps of Engineers ("Corps")
UTV	Utility task vehicle
WRE	Wetlands Reserve Easement

SECTION

I

BACKGROUND MATERIALS

SECTION I: BACKGROUND MATERIALS

How to use this Handbook

This handbook is designed to accompany the long-term stewardship calculator (available at www.nature.org/stewardshipcalculator), providing an overview of the long-term stewardship tasks included in the calculator and factors that affect their cost. The calculator can be used by land managers to estimate the long-term stewardship costs associated with voluntary conservation projects, both for conservation easements and fee-owned land. For compensatory mitigation projects, the calculator can be used by mitigation providers to estimate long-term management costs, by long-term managers and easement holders to determine the funding they will need to complete long-term management tasks before they assume such responsibility and by regulators to ensure sufficient funds are being set aside for long-term management.

The handbook provides two navigation options:

1) For newcomers to long-term stewardship budgeting, the handbook is organized into sections designed to explain what constitutes "long-term stewardship" for all types of projects, provide guidance on estimating costs of specific tasks and provide information on various long-term financing mechanisms. It may be helpful to read through the entire handbook before using the calculator.
2) Experienced long-term stewards can jump straight to Appendix A: Guide to Using the Calculator on page 63, or they can navigate to the more detailed information in specific sections of the main handbook. Examples of the calculator used to estimate costs on three different types of projects are included in Appendix B: Examples of the calculator in use on page 79.

Checklist of things you need to have before using the calculator:

- ☐ Easement holder's and/or long-term manager's policies on stewardship funding and management of land (for easements and fee land, if applicable).
- ☐ Easement holder's and/or long-term manager's fund management and investment policy.
- ☐ Long-term management plan (especially for mitigation projects). This may not have been completed yet if the calculator is being used as part of the acquisition process.
- ☐ Working knowledge of stewardship activities and their associated costs, specific to your organization.

Bookmarks and hyperlinks:

This handbook includes bookmarks to make it easy to jump to specific sections, as well as hyperlinks to many additional resource documents. If you are reading a printed version of the handbook and want to visit any of the hyperlinked resources, you can find the electronic version of this document at www.nature.org/stewardshipcalculator.

Purpose of this Handbook

Conservation and environmental restoration projects can range from voluntary projects undertaken as part of an organization's normal operations to actions required as a condition of a permit from local, state, or federal authorities. Section 404 of the Clean Water Act regulates the dredging and filling of wetlands, streams, and other aquatic resources. Permits issued under this program may require compensatory mitigation to offset permitted environmental losses. Section 404 compensatory mitigation projects are required to consider and address the long-term management needs of a mitigation site.[19] This handbook is intended to help entities fully consider the long-term management needs of a conservation or restoration project, regardless of whether that project is undertaken voluntarily or as compensatory mitigation under Section 404 or other authority. Compensatory mitigation projects are expected to meet certain regulatory requirements, and this handbook strives to highlight where these requirements may require specific practices.

Wetlands Compensatory Mitigation 101[20]

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Toward achievement of this goal, the CWA prohibits the discharge of dredged or fill material into waters of the United States unless a permit issued by the Army Corps of Engineers or approved State under CWA Section 404 authorizes such a discharge. If a landowner wants to fill or disturb a wetland or stream as part of a development project, they must first get a permit from the Corps.

For every authorized discharge, the adverse impacts to wetlands, streams and other aquatic resources must be avoided and minimized to the extent practicable. For unavoidable impacts, compensatory mitigation is required to replace the loss of wetland and aquatic resource functions in the watershed. Compensatory mitigation refers to the restoration, establishment, enhancement, or in certain circumstances preservation of wetlands, streams or other aquatic resources for the purpose of offsetting unavoidable adverse impacts.

Compensatory mitigation for unavoidable wetland impacts may be accomplished through three distinct mechanisms. With permittee-responsible mitigation, the permittee maintains liability for the construction and long-term success of the site. Mitigation banking and in-lieu fee mitigation are forms of "third party" compensation, where the liability for project success is transferred to the mitigation bank or in-lieu fee sponsor.

Mitigation Banking: A wetlands mitigation bank is a wetland area that has been restored, established, enhanced or preserved, which is then set aside to compensate for future conversions of wetlands for development activities. Permittees, upon approval of regulatory agencies, can purchase credits from a mitigation bank to meet their requirements for compensatory mitigation. The value of these "credits" is determined by quantifying the wetland functions or acres restored or created. The bank sponsor is ultimately responsible for the success of the project. Mitigation banking is performed "off-site," meaning it is at a location not on or immediately adjacent to the site of impacts, but within the same watershed. Federal regulations establish a flexible preference for using credits from a mitigation bank over the other compensation mechanisms.

In-Lieu Fee Mitigation: Mitigation that occurs when a permittee provides funds to an in-lieu-fee sponsor (a public agency or non-profit organization). Usually, the sponsor collects funds from multiple permittees in order to pool the financial resources necessary to build and maintain the mitigation site. The in-lieu fee sponsor is responsible for the success of the mitigation. Like banking, in-lieu fee mitigation is also "off-site," but unlike mitigation banking, it typically occurs after the permitted impacts.

[19] 33 C.F.R. §332.4(c)(11)

[20] Taken in part from U.S. Environmental Protection Agency. 2008. Wetlands Compensatory Mitigation factsheet. EPA-843-F-08-002. www.epa.gov/sites/production/files/2015-08/documents/compensatory_mitigation_factsheet.pdf

Permittee-Responsible Mitigation: Restoration, establishment, enhancement or preservation of wetlands undertaken by a permittee in order to compensate for wetland impacts resulting from a specific project. The permittee performs the mitigation after the permit is issued and is ultimately responsible for implementation and success of the mitigation. Permittee-responsible mitigation may occur at the site of the permitted impacts or at an off-site location within the same watershed.

The requirements for all forms of mitigation are outlined in the Compensatory Mitigation for Losses of Aquatic Resources Final Rule (available at 33 C.F.R. §332).[21] Among other provisions, the rule requires mitigation sites to be protected by a conservation easement, deed restriction, or other mechanism. Mitigation plans must also identify the party responsible for long-term management, include a description and annual cost estimate of necessary long-term management tasks, and identify a funding mechanism that will provide for completion of these tasks into the future. A mitigation project enters the long-term management phase after a minimum of five years of monitoring to track progress toward achieving ecological performance standards. In some circumstances there may be a longer monitoring period prior to beginning long-term management.

The wetland compensatory mitigation program seeks to establish sites that continue to replace lost aquatic resource functions after performance standards have been met.[22] A number of entities may be involved in long-term management including the endowment or fund manager, long-term steward, conservation easement holder, as well as the regulatory agencies (see Table 1.)

Table 1. Entities involved in long-term management of a mitigation site.

Entity	Role in Long-term Management
Endowment or Fund Manager	Invests the endowment or other financial mechanism that is intended to provide the annual income necessary to fund annual long-term stewardship tasks.
Long-term Steward	Implements the tasks identified in the long-term management plan, with costs covered by the endowment or other financial mechanism.
Conservation Easement Holder	Monitors the site for compliance with the terms of the easement and takes legal action, if necessary.
Regulatory Agencies	Review annual reports and may provide oversight or take enforcement action, if necessary.

[21] USACE and EPA. 2008. *Compensatory Mitigation for Losses of Aquatic Resources*. Final rule. Federal Register April 10, 2008. Vol. 73, No. 70: pp. 19594-19705. 33 C.F.R. §332 and 40 C.F.R. §230 Subpart J.

[22] 33 C.F.R. §332.7(b)

When a conservation organization acquires a property or a conservation easement, it commits to protecting the land's conservation values for the future. **However, merely setting land aside may not ensure that the natural resources for which the land was valued are preserved**. Invasive species, trespass, urban encroachment, land use changes within the watershed and changing environmental conditions (sea level rise, changes in precipitation and weather patterns, etc.) can all impact the conservation values of a natural area. This holds true whether the land is privately-owned but protected by a conservation easement, owned in fee by a land trust, or protected and restored to meet compensatory mitigation requirements.

Sherry Teresa, of EcoLogical Solutions Consulting LLC, said it best at the 2008 Transportation Research Board Conference: "Acquisition does not equal protection."

For both voluntary conservation and mitigation projects, **it is necessary to consider what tasks may be needed over the long term to ensure the ecological values of a site will be preserved**. Depending on the objectives for the site, only basic tasks such as trash removal may be needed, while other sites may require more intensive activities such as prescribed fire. In considering the long-term management necessary at a site one should strive to identify tasks that are reasonably foreseeable needs for the site, and provide adequate funding to ensure these activities can be implemented. **These long-term stewardship costs must be accounted for and adequately funded as part of project development**. Such full-cost accounting is an essential component of credit pricing for mitigation banks and in-lieu fee programs. Likewise, conservation organizations expecting to protect land into perpetuity need to understand the full cost of this endeavor.

Long-term stewardship costs are inherently difficult to predict and consequently are often underestimated. For compensatory mitigation projects, thorough long-term planning is essential as the amount of long-term stewardship money set aside for a property is decided during the project approval phase, and there is no mechanism to request additional funds from the project sponsor after the project has transitioned to long-term management. As the long-term management responsibilities for mitigation properties are often passed on to a long-term steward, if the accompanying funds for stewardship

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aren't sufficient to adequately manage the property, the aquatic resources and associated riparian areas and buffers are at risk of becoming degraded over time.

The stewardship calculator is intended to provide a standard method for estimating and evaluating long-term protection, administration and management funding needs of conservation and restoration properties, including those provided through compensatory mitigation. This handbook provides additional background and instructions to support the use of the calculator. The calculator is intended to be used at various stages of the project planning process, including when initial cost estimates are being developed and evaluated, the long-term management plan (or LTMP) is being developed, credit prices are being established, or periodically throughout the life of a project if there are major adjustments to the long-term management plan. The calculator tool will prompt the user to ensure all appropriate costs are considered, but may need to be periodically updated given new technology, tools, or regulatory requirements. To ensure you are using the latest version, check www.nature.org/stewardshipcalculator.

Once the annual tasks and their associated costs have been estimated, the calculator serves as a tool to determine the amount that must be set aside in a stewardship fund to provide funding for long-term stewardship activities.

The long-term stewardship calculator has been designed to be flexible, so that it can be modified to fit a variety of stewardship situations. These may include, but are not limited to, the following:

1) *Conservation easements (CE):* routine monitoring and enforcement
2) *Properties owned in fee:* property inspections, management activities
3) *Mitigation properties:* easement monitoring, management activities

The tool may be used by the mitigation provider, easement holder, fee title holder, land manager, regulatory agency, and other interested parties. The target audiences for these resources are mitigation providers, land trusts, state government agencies, tribal governments, local governments, and other wetland regulatory agencies. For mitigation projects, the calculator can be a useful tool to document how long-term stewardship costs were calculated during discussions between the mitigation provider, the regulatory agencies and other interested parties such as the easement holder and long-term manager.

The calculator has been designed to be transparent, so that users may see the formulas used to calculate average annual costs and the resulting total fund amount needed. This handbook also provides a detailed explanation of the assumptions and inputs used in the calculator.

This handbook is not intended to provide an in-depth training on how to develop a long-term management plan. We have found the following resources to be useful for more information on LTMP development and specific management activities:

"Caring for Land Trust Properties"[23]

"Conservation Easement Stewardship"[24]

"Determining Stewardship Costs and Raising and Managing Dedicated Funds"[25]

"Wetland and Stream Mitigation: A Handbook for Land Trusts"[26]

"Long-Term Management of Compensatory Mitigation Projects"[27]

We have created an open-access web portal with additional guidance, training, and links to resources at www.nature.org/stewardshipcalculator.

[23] Brown, H. and A. Pitz. 2008. Caring for Land Trust Properties. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance.
[24] Bouplon, R. and B. Lind. 2008. Conservation Easement Stewardship. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance.
[25] Doscher et al. 2007.
[26] ELI 2012.
[27] Martin, S. 2015. Long-Term Management of Compensatory Mitigation Projects. Army Corps of Engineers, Institute for Water Resources (forthcoming).

What do we mean by "Long-term Stewardship"?

Stewardship is a broad term that encompasses all activities related to ensuring the protection of a site as well as management of its physical and ecological features. The Land Trust Alliance (the Alliance) defines stewardship as "the ongoing responsibility to supervise and maintain lands either owned outright (fee lands) or managed (conservation easements) by the land trust."[28]

Stewardship of a conservation easement includes "monitoring; landowner relations; recordkeeping; processing landowner notices, requests for approval, and amendments; managing stewardship funds; and enforcement and defense."[29]

Stewardship of fee lands is much harder to define, as the responsibilities vary depending on the mission of the land trust and/or mitigation provider, the goals and objectives for the particular site, physical attributes of the site, its ecological condition, and much more.

While the conservation community tends to use the term *long-term stewardship*, the regulatory community refers more often to *long-term management* in the context of compensatory mitigation. For the most part, the two terms are used interchangeably here unless a specific distinction is noted.

Long-term stewardship, as the name implies, is distinguished from those activities associated with acquisition of a property and start-up. *Stewardship startup costs* are typically one-time costs necessary to get a preserve up and running and include such activities as conducting a biological inventory, land management planning, fencing, erecting signs, and in rare cases,

The importance of adequately funding long-term stewardship is underscored in the following Land Trust Alliance Standards and Practices:

Standard 11: Conservation Easement Stewardship

Practice 11A. Funding Easement Stewardship. The land trust determines the long-term stewardship and enforcement expenses of each easement transaction and secures the dedicated or operating funds to cover current and future expenses. If funds are not secured at or before the completion of the transaction, the land trust has a plan to secure these funds and has a policy committing the funds to this purpose.

Note: Practice 11A is designated an "indicator practice" on which a land trust will be evaluated for accreditation, reflecting the importance of this practice to the integrity of land conservation.

Standard 12: Fee Land Stewardship

Practice 12A. Funding Land Stewardship. The land trust determines the immediate and long-term financial and management implications of each land transaction and secures the dedicated and/or operating funds needed to manage the property, including funds for liability insurance, maintenance, improvements, monitoring, enforcement and other costs. If funds are not secured at or before the completion of the transaction, the land trust has a plan to secure these funds and has a policy committing the funds to this purpose.[30,31]

[28] Doscher et al. 2007.

[29] Ibid.

[30] Bates, S.K. and T. Van Ryn, eds. 2006. Land Trust Standards and Practices Guidebook: An Operating Manual for Land Trusts, Volume 1 and 2, revised. Land Trust Alliance.

[31] Land Trust Accreditation Commission. 2014. Accreditation Requirements Manual: A Land Trust's Guide to Understanding Key Elements of Accreditation. Saratoga Springs, NY. www.landtrustaccreditation.org.

demolition or renovation and construction of buildings. Ongoing repair and replacement of such fences and signs, continuing biological monitoring and other habitat management would then be considered long-term stewardship activities. Baseline documentation for easements is typically done as part of the acquisition process before the easement is recorded and is not included as part of long-term stewardship.

This calculator was designed to estimate the costs associated with managing a site after start-up activities have been completed in the case of voluntary conservation projects and, in the case of compensatory mitigation projects, after performance standards have been met.

The 2008 Compensatory Mitigation Rule recognizes the importance of long-term management to preserve the conservation values of a site after restoration or enhancement has been completed. The 2008 Rule requires that all mitigation sites (including permittee-responsible compensation sites, mitigation banks and in-lieu fee sites) address the need for long-term management. If long-term management is required, the approved mitigation plan must include a long-term management plan that describes "how the compensatory mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management."[32] Annual cost estimates must be provided for long-term management needs.[33]

Long-term stewardship of compensatory mitigation sites includes easement monitoring and defense as well as operation, maintenance and management of the site. **Long-term management activities are tied to specific tasks in the long-term management plan, which should specifically state the frequency, timing, methods and materials involved with each task**.[34]

Tasks may be performed by different entities, depending on their role: fee title holder, easement holder, long-term stewardship fund holder, or long-term manager and specific funds should be allocated to each entity to allow them to complete those tasks.

Long-term stewardship activities may be driven by regulatory requirements (for mitigation projects) or legal need (for easement compliance). Public or other grant funds used to acquire land may come with strings attached, with grant agreements that require certain stewardship activities be conducted in order to ensure the intent of the funding is upheld.[35] However, the degree of stewardship that is considered to be "required" on more traditional, voluntary conservation projects varies widely between land managers depending on the goals of the project and standards applied. For example, some consider control of invasive species to be an essential component of long-term stewardship, while others conduct control only if supplemental funding from grants or other sources is secured. What is considered essential to long-term stewardship may be defined in an organization's policies and procedures or in guidance documents.

The Northeast Division of The Nature Conservancy (the Conservancy) developed a "Must Do, Should Do, Could Do List of Stewardship Activities" to help prioritize tasks (see Appendix C on page 101). This may provide useful guidance to prioritize tasks when the annual return on the stewardship fund is lower than expected. The most important thing to keep in mind when evaluating long-term stewardship activities is what is required through permit conditions, approved long-term management plans, legal contracts, or donor intent AND what actions are required to ensure the long-term viability of the habitat. While the first set of requirements is imperative to follow, the latter considerations are important to ensure conservation outcomes are sustainable and meaningful.

[32] 33 C.F.R. §332.4(c)(11)
[33] 33 C.F.R. §332.7(d)(2)
[34] DeYoung, G. and B. Polin. 2015. Long-Term Stewardship Workshop. National Mitigation and Ecosystem Banking Conference, Orlando, FL. May 5-8, 2015.
[35] Doscher et al. 2007.

SECTION

II

COST ESTIMATES GUIDANCE

SECTION II: COST ESTIMATES GUIDANCE

Estimating Costs

The calculator estimates the average annual cost of stewardship, which is developed based on costs estimated by the user. The average annual costs for each task are summed to determine the total annual cost of stewardship, which is used to calculate the amount needed to establish the long-term stewardship fund.

Whether protected by a land trust for conservation purposes or by a mitigation provider as part of a compensatory mitigation project, each property is unique and as such has unique needs for long-term stewardship. **The specific long-term stewardship tasks depend on the goals and objectives for an individual site, whether those are driven by the land trust's mission, the property's ecological resources or by regulatory requirements**. There is no one-size-fits-all template for a long-term management plan, although several Corps Districts have developed LTMP templates specific to their District that may be found on the District website or in the Regulatory In-lieu fee and Bank Information Tracking System (RIBITS) at https://ribits.usace.army.mil. Of course, every long-term management plan and its corresponding costs must be custom-fit to the site.

Given the great variability across sites, it is unrealistic to come up with an average, or per-acre, cost for individual tasks. **The time-honored adage of real estate holds true for stewardship of conservation lands as well: Location, location, location!** Factors such as remoteness, urban/rural setting, adjacent land use, edge effects and the degree of public use all influence stewardship costs.[36] Similarly, the location of the project will impact associated labor and materials costs, which can range drastically in different geographical regions, as well as between urban and rural settings.

The Center for Natural Lands Management, in an analysis of stewardship costs for 28 case studies, found that while there was no rule of thumb for predicting costs based on the size of the preserve, there were dramatic economies of scale. **"Costs ranged from around a $1,000 an acre per year for many smaller projects to well under a $100 an acre per year for the larger projects."**[37]

Likewise, new acquisitions that add to existing preserves may not result in an increase in stewardship costs proportional to the increase in acreage. Such acquisitions may make management of the original property easier by "increasing the scale of potential forestry operations, providing better access or preventing incompatible development on adjoining land."[38,39]

The ecological integrity of a site also affects the cost of long-term management. The quality and appropriateness of restoration efforts and the presence of invasive species both influence the type and degree of long-term management, and thereby the costs, that will be necessary to maintain a site's ecological structure and function.[40]

The cost of monitoring and defending an easement depends in large part on the extent of the easement restrictions and permitted rights and the number of potential subdivisions. In general, more permitted rights and potential subdivisions require more staff time to monitor them.[41]

Where possible, ranges of typical cost estimates for each task are included in the Task Descriptions section beginning on page 17. These are provided as a guide to give the user a general idea of potential ranges for an actual cost estimate but will vary drastically in different locations and increase with annual inflation rates. Specific costs for individual activities must be estimated by the user in order to develop accurate cost estimates specific to the idiosyncrasies of the site.

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[36] Center for Natural Lands Management (CNLM). 2004. Natural Lands Management Cost Analysis: 28 Case Studies. Center for Natural Lands Management, Fallbrook, CA. 201 pp.
[37] Ibid.
[38] Doscher et al. 2007.
[39] N. Sferra, Director of Stewardship and Ecological Management, Maine Field Office, The Nature Conservancy (TNC), personal communication, July 14, 2015.
[40] CNLM 2004.
[41] Doscher et al. 2007.

The following resources may be useful for developing accurate cost estimates:

Resource:	How to Contact:
County Natural Resources Conservation Service (NRCS) Office (cost data available from grant program reports, such as Environmental Quality Incentives Program (EQIP) cost-share figures)	Find your local NRCS office here: http://offices.sc.egov.usda.gov/locator/app
County Cooperative Extension Office	Find your local Extension office here: www.extension.org
State Fish and Wildlife Agency (habitat restoration cost data may be available from private lands biologists)	Find your state agency here: www.fishwildlife.org/index.php?section=social-media
Local Contractor Bids (county Soil and Water Conservation District (SWCD) offices often have lists of local contractors for environmental work)	Find your local SWCD office here: http://offices.sc.egov.usda.gov/locator/app
RS Means Cost Works (engineering and construction cost estimates, available for a fee)	www.rsmeans.com
Local equipment suppliers	Internet search
Corps of Engineers in-house engineering cost estimates (may be available only to Corps or state agency staff)	Find your Corps District office here: www.usace.army.mil/Contact/OfficeLocator.aspx
Cost estimates for long-term management of similar mitigation projects in the area	Long-Term Management Plans may be available on RIBITS: https://ribits.usace.army.mil
Publicly-available bids for similar projects (e.g. North Carolina Dept. of Environmental Quality Division of Mitigation Services, http://deq.nc.gov/about/divisions/mitigation-services). Contact your state environmental agency to find out about similar projects.	Find your state environmental agency here: www2.epa.gov/home/health-and-environmental-agencies-us-states-and-territories
Local farmers/ranchers	Contact county SWCD office for referrals or visit a local restaurant for an early morning breakfast

The calculator estimates the *average annual cost* of long-term stewardship activities. For those tasks that occur every year, this is straightforward. For those tasks that occur less frequently, such as species monitoring that must be done every two or three years, the calculator divides the cost of that task by the frequency of occurrence to arrive at the average annual cost. For example, a task that costs $1,000 that is completed every five years has an average annual cost of $200.

The recurrence interval of a task varies widely depending on the task and can be somewhat subjective. The frequency of tasks, such as easement monitoring, may be set by regulatory or site protection requirements or standard operating procedures, while the frequency of biological monitoring of species or vegetation may be up to the discretion of the preserve manager depending on the objectives for the site.

For compensatory mitigation projects, tasks must be performed at the intervals identified and agreed upon in the long-term management plan, unless coordinated with the relevant regulatory agencies. Guidance on estimating the frequency of occurrence of individual tasks is provided in each task description below. The calculator defaults to a recurrence interval of one year. For those tasks that are less frequent, the recurrence interval must be changed by the user to the appropriate value.

Task Descriptions

Tasks are grouped into two categories in the calculator: 1) Site protection monitoring and easement stewardship and 2) Land management and maintenance.

Site protection monitoring and easement stewardship includes those tasks necessary to ensure the site continues to be protected, whether by a conservation easement or fee ownership by a conservation organization.

Land management and maintenance includes repair and replacement of infrastructure as well as habitat management activities.

The user can choose which section of the calculator applies to their situation, depending on their role. For example, land trusts acquiring an easement need only complete the section on Site Protection Monitoring and Easement Stewardship (beginning on page 19) unless they have agreed to take on management responsibilities, in which case they would complete both sections. Land trusts acquiring a fee property would complete both sections. For mitigation projects, both sections should be completed, although the tasks may be performed by different parties. In this case, tasks performed by the easement holder should be estimated in the Site Protection Monitoring and Easement Stewardship section and tasks performed by the land manager and/or fee owner should be estimated in the Land Management and Maintenance section (beginning on page 28). The party responsible for each task should be indicated in the calculator. Descriptions of the tasks in each category are below, to provide guidance to the user in determining cost estimates.

Assumptions

The first sheet in the calculator is Assumptions, where general information about the project is entered. Unit cost estimates for staff hourly rates and travel costs entered here are used in the calculations in the rest of the calculator. Rates that are used to calculate the total fund amount are entered here as well, including the capitalization rate, contingency and administrative rates, and percent of annual costs covered by the fund.

For a more detailed discussion of how to determine these rates, see How to Plan for Common Underestimates and Surprise Costs (page 49) and Endowment Management and the Capitalization Rate (page 53).

Staff hourly rates may be entered using average rates for regular and short-term employees, or using specific hourly rates for individual positions. If more than two hourly rates are desired, the staff type rows may be expanded to input up to four additional hourly rates. In all cases, staff hourly rates should include benefits.

Marking invasive plant locations along the Skagit River in northwestern Washington. © Bridget Besaw

CALCULATOR QUICK REFERENCE GUIDE
Assumptions Sheet

Unit Cost Estimates:	
Regular staff hourly rate (inc benefits)	Enter the average hourly rate, including benefits, of a regular employee likely to work on management of the property. If currently using volunteers for some tasks, estimate labor using the hourly rate for paid staff to ensure sufficient funds if staff take over volunteer responsibilities in the future. For mitigation projects, all tasks should be completed by either paid staff or contractors (entered under relevant tasks).
Short-term staff hourly rate (inc benefits)	Enter the average hourly rate, including benefits, of a short-term employee likely to work on management of the property. If short-term employees are not used, enter 0.
Enter staff type and hourly rate (inc benefits)	If additional hourly rates are needed, click the "+" to the left of row 14 to expand additional rows. Type the staff type in column A (for example, "Staff ecologist") and enter the hourly rate, including benefits, in column D.
Mileage OR cost (round-trip)	Enter either the round trip mileage in the first blue cell or the round trip cost in the second blue cell for one visit to the property.
Mileage rate	Defaults to $0.54 (2016 federal rate). The user can change this to a rate specific to their organization. The default rate should be updated annually using the rate for privately owned vehicles found at www.gsa.gov/mileage).
Per diem (meals)	Enter an estimate of the cost of one day's meals while visiting the property. For reference, location-specific federal rates can be found at www.gsa.gov/perdiem.
Overnight lodging cost (per night)	Enter an estimate of one night's lodging while visiting the property, if appropriate. For reference, location-specific federal rates for mid-range hotels can be found at www.gsa.gov/perdiem.
Additional Rates:	
Capitalization rate	Enter the capitalization rate (i.e., cap rate, equal to annual return minus inflation and any fund management fees). A rate between 2.6% to 4.2% has been recommended.[42]
Percent of annual costs covered by fund (50% or 100%)	Defaults to 100%. Enter whether the fund will cover 50% or 100% of the annual costs (per stewardship funding policy). For mitigation projects the fund should cover 100% of the annual costs.
Contingency (10-20%)	Enter an appropriate contingency rate. A rate between 10-20% has been recommended.[43]
Administrative (recommended minimum 10%)	Enter an appropriate administrative rate. A minimum rate of 10% has been recommended.[44] If an organization has a federal NICRA, that rate may be used as the administrative rate.

[42] Commonfund Institute. 2016. 2015 NACUBO-Commonfund Study of Endowments Results Released. https://www.commonfund.org/2016/01/27/2015-nacubo-commonfund-study-of-endowments/

[43] Martin 2015 forthcoming.

[44] Ibid.

Site Protection Monitoring and Easement Stewardship

Site protection monitoring and easement stewardship tasks include those necessary to ensure the ongoing protection of the site. The specific requirements may vary, as dictated by the land protection mechanism, from conservation easements to deed restrictions to fee simple ownership by a conservation organization (see Section I, What do we mean by "Long-term Stewardship"? on page 12 for more information). The tasks have been grouped into three general categories, further explained below:

1) Monitoring the site protection mechanism
2) Maintaining landowner/neighbor relationships
3) Site protection enforcement

Monitoring the site protection mechanism

Sites protected by conservation easements, deed restrictions or fee ownership by a conservation organization should be monitored at least annually to ensure the protection mechanism is being upheld. Monitoring may take a variety of forms, either by foot, car, boat, plane, satellite, or other method, as dictated by the geography and topography of the site and the goals of the monitoring program. Most monitoring programs include some degree of on-the-ground monitoring.

A typical on-the-ground monitoring visit includes checking boundaries for encroachment, walking a representative portion of the site to check for any issues, and taking photos at set photopoints. Issues such as unauthorized trails, dumping, timber harvest, safety hazards, erosion, and invasive species should be documented. GPS may be used to track the monitoring path and mark the location of photos and any observed issues.

The monitor of a conservation easement should verify that specific restrictions laid out in the easement are being followed by the landowner. Site protection monitoring is generally considered a separate task from monitoring of ecological conditions, which is discussed in further detail on page 38.

The time spent on site during a site visit depends on the accessibility and size of the site, terrain and habitat type. If sites are open and easy to traverse, with unobstructed views, such as mesic prairie, site visits may be relatively simple. Heavily vegetated sites that are more difficult to traverse, such as bottomland hardwood forests, may take longer to monitor.[45,46]

The cost of site monitoring involves much more than the time spent visiting the site. Preparation for the site visit, follow-up and reporting afterwards can often take just as long as the site visit itself. Site visit preparation includes contacting the landowner (if the landowner is not the long-term steward) and gathering field supplies such as a GPS unit, camera, flagging tape, compass, and safety gear. Monitors should review background files such as the long-term management plan, easement documents, baseline documentation report, previous monitoring reports, maps and aerial photographs.

Following the site visit, site protection monitoring reports should be completed to serve as written documentation. The required contents of the report will vary depending on the nature of the site, any easement restrictions or regulatory obligations, but generally include a narrative description, with photos and maps as appropriate.

The time and costs involved with administration of a monitoring program, including appropriate recordkeeping, planning, and follow up, are often underestimated or overlooked altogether. Land trusts that currently use volunteers to conduct annual monitoring should consider the costs of using paid staff down the road, a typical programmatic evolution as stewardship programs grow and mature.[47] For compensatory mitigation sites, paid staff time should always be assumed.

[45] H. Holland, Senior Conservation Planner, Westervelt Ecological Services, personal communication, June 25, 2015.
[46] N. McGoff, Director, Roseland Stewardship Corp., personal communication, May 14, 2015.
[47] Doscher et al. 2007.

For large, remote or inaccessible sites, alternatives to boots-on-the-ground monitoring may be a more cost-effective strategy. This could include aerial flyovers, reviewing satellite imagery or aerial photographs, or the use of unmanned aerial vehicles (UAVs or "drones") to monitor for encroachments or unauthorized land use. Remote monitoring should be supplemented with site visits at least once every three years to ensure compliance.

The cost of satellite imagery is highly variable, depending on the area of the coverage needed, desired resolution, and whether archive imagery is available or a new collection must be requested. Orders may be subject to minimum or maximum size limits. For example, standard imagery from DigitalGlobe requires a minimum purchase of 25 km^2 for archive imagery or 100 km2 for new orders, up to a maximum of 10,000 km^2 per order. Relatively recent aerial photos may be available for free from the USGS (http://earthexplorer.usgs.gov), or online sources such as Google Earth or Bing. Many states conduct aerial imagery flyovers every one to two years.

The cost of an "off the shelf" drone (e.g., DJI Phantom or DJI Flamewheel 550) ranges from around $1,000 to $2,500, depending on the specifications. Cameras may need to be purchased separately, depending on the application. Costs range from $250-400 for point-and-shoot cameras (e.g., GoPro or Canon SX260) to $700 for a more advanced camera, like a QX-1. Sensors for more advanced applications, such as multispectral imaging, LiDAR and infrared, including software to process the imagery, can run around $8,000. Fixed-wing, professional grade UAVs can run in the $20,000-30,000 range. FAA regulations on the use of drones for conservation work are still under development. In the meantime, UAV operators should follow standard hobbyist radio-controlled aircraft rules. Landowner consent should be obtained before flying drones over property owned by others.

See CALCULATOR QUICK REFERENCE GUIDE – Site Protection Monitoring and Easement Stewardship Costs Sheet on page 21.

Maintaining landowner/neighbor relationships

The time spent to maintain landowner and neighbor relationships is often underestimated and therefore undervalued. Managers of fee-owned property must set aside time to develop good relationships with neighbors to prevent inadvertent encroachments and to address problems that may arise. Time spent cultivating such relationships generally pays off because neighbors can keep an eye on the site and alert the land manager of developing problems, especially in those locations where the land manager or easement holder does not have staff on site or nearby.

Ongoing communication with the landowner is also an essential component of easement stewardship to prevent potential problems and resolve problems promptly as they occur. Communicating with new landowners as the property changes hands also ensures that easement restrictions are understood and continue to be respected.[49]

The time and expense involved in communicating with a landowner depends on whether approval of the easement holder is needed for the exercise of reserved rights, such as buildings permitted within a designated building envelope, limited agricultural/ranching/timber use, recreational use and fence construction. Responsibilities of easement holders may include responding to landowner questions regarding permitted and restricted uses, reviewing and approving the exercise of reserved rights, additional site visits when reserved rights are exercised (such as during the construction of a building) and extra monitoring if an easement involves affirmative obligations of the landowner for specific management activities.[50]

[49] Doscher et al. 2007.
[50] Ibid.

CALCULATOR QUICK REFERENCE GUIDE
Site Protection Monitoring and Easement Stewardship Costs Sheet

Monitoring the site protection mechanism		
Responsible party	Indicate the party responsible for monitoring the site protection mechanism where applicable. Depending on the situation, the easement holder, fee owner and land manager may be different parties, and thereby responsible for different tasks.	
Recurrence interval	Defaults to 1, but may be changed by the user in accordance with stewardship policy.	
Preparation for site visit	*Hours:*	Enter number of hours each staff type will spend annually. Include time spent reviewing easement documents, previous reports, aerial photos, corresponding with landowners or neighbors, etc.
Travel expenses occurring annually	*Number of trips annually:*	Enter the number of separate round trips annually. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for annual site visit(s):	Enter the total number of nights all employees will spend for all trips annually. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for annual site visit(s):	Enter the total number of days all employees will spend for all trips annually. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Travel expenses (non-annual trips)	Note: If additional trips are planned for tasks that will be done less than annually (e.g. once every 3 years) enter those travel expenses here. The recurrence interval defaults to 3, but this should be changed to the appropriate interval. If additional trips are planned with varying frequencies, these rows can be copied and pasted as many times as necessary.	
	Number of trips:	Enter the number of separate round trips. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for site visit(s):	Enter the total number of nights all employees will spend for all trips. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.

CALCULATOR QUICK REFERENCE GUIDE
Site Protection Monitoring and Easement Stewardship Costs Sheet (continued)

Monitoring the site protection mechanism (continued)		
	Allowance for meals (# of days) for site visit(s):	Enter the total number of days all employees will spend for all trips. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Site visit	*Hours:*	Enter number of hours each staff type will spend visiting the site annually, including travel time. Time on site varies depending on accessibility, terrain, and habitat type.
Prepare and submit report, maintain records	*Hours:*	Enter number of hours each staff type will spend preparing the monitoring report following the site visit, communicating with the Corps and other regulatory agencies (for mitigation easements) and maintaining records.
	Expenses:	Enter cost of printing, copying, mailing and other expenses related to maintenance of records (including the cost of fireproof file cabinets). Records may include long-term management plans, legal documents, monitoring reports, photos, notice of approvals and landowner correspondence.[48]
Supplies	*Description:*	Enter description of supplies (e.g., iPad/tablet, camera, GPS, aerial or satellite imagery, UAV (drone)).
	Quantity:	Enter 1. However, if supplies are typically included in the organization's overall land stewardship operating budget, rather than allocated to individual preserves, estimate the percent of time the supplies will be used on this property annually and enter that as the Quantity. For example, if an iPad will be used on several properties, with approximately 10% of the time spent on this property, enter 0.1 as the Quantity. The calculator will then determine the annual cost of supplies allocated to this property.
	Unit Cost:	Enter total amount to be spent on supplies annually. Alternatively, an hourly or daily rate for use of supplies may be entered here, with the corresponding number of hours or days entered as the quantity. Make note of this in the description.

[48] Doscher et al. 2007.

CASE STUDY:

The Conservancy and the Indiana Department of Natural Resources (IDNR) hold several easements along Fish Creek in northeast Indiana and northwest Ohio. The easements were purchased with funds from a court-ordered settlement to mitigate for a fish kill, with the goal of protecting water quality for several federally endangered mussels found in Fish Creek.

The easements allow hunting and noncommercial recreation by the landowners, which appears simple, but disputes over the construction of wooden tree stands have taken considerable staff time over the years to resolve. Over the past five or six years, as the easements have matured and key staff positions turned over, IDNR staff found themselves investing more time communicating with landowners to clarify what types of deer stands the easements allow and prohibit, and what requires advanced permission from IDNR.

Former IDNR Restoration Biologist Jennifer Campbell recalls that, "sometimes even without a landowner change, folks feel less comfortable over time with the 5 or 10 percent of control they surrendered in exchange for the compensation they received (80 percent of land value). Eventually, we had to GPS every single tree stand/hunting condo so we knew which were grandfathered in and which were 'improvements.' Some of the landowners inquired about how much they would need to pay back to divest the interest in the easement. Such situations can become a balance between compliance and public relations, and consume considerable staff time."

The compliance issues remained unresolved when current Restoration Biologist Scott Salmon took the position in 2012. After several site visits and written correspondence with the landowners, the issues have been resolved. But a significant amount of time was spent trying to maintain consistency with the decisions made by the previous staff, while allowing a compromise to be reached with the landowners that maintained the water quality the easements are intended to protect.

Even now, IDNR biologists continue to spend time approving management plans submitted by a landowner who wants to actively manage his land for deer hunting by creating deer passage lanes and bedding areas. Salmon has found that holding easements on adjoining properties with different landowners—all avid deer hunters who compete for trophy deer harvests—continues to require four to five days of staff time each year to manage those relationships.

Time may also need to be set aside to prevent or address livestock issues on neighboring land, a problem more often encountered in the western U.S. The adage, "Fences make good neighbors", may reign true here—potential time spent on this issue may be reduced if the site is fenced.[51] Other, less commonly considered problems that may arise include timber theft, the building of unauthorized structures and planting of unauthorized vegetation.[52]

[51] M. Schroeder, Senior Financial Analyst, TNC, personal communication, April 14, 2015.
[52] S. Martin, USACE Institute for Water Resources, personal communication, May 18, 2015.

Included in this category as potential expenses are communications and outreach, such as newsletters, and educational events designed to maintain good communication with landowners, neighbors, and other interested parties. These types of communication help to encourage responsible land management of properties protected with easements while building relationships with landowners.

When calculating the annual cost of maintaining landowner and neighbor relationships, **it may help to imagine all possible tasks, based on the philosophy of the land trust, and to estimate the average time involved as well as the frequency of the task**.[53] These can then be lumped together and entered in the staff time entry in the calculator to determine the average annual cost.

> "Experience proves almost any job takes longer than the time budgeted, so it's important not to underestimate staff time."[54]

Site Protection Enforcement Costs

The easement holder is responsible for addressing violations of the easement or other legal challenges to the site. Enforcement actions may also be necessary on fee-owned preserves to settle boundary disputes, competing claims of ownership, trespass or other disagreements. **It's difficult to predict when or if**

CALCULATOR QUICK REFERENCE GUIDE
Site Protection Monitoring and Easement Stewardship Costs Sheet

Maintaining landowner/neighbor relationships		
Recurrence interval	Defaults to 1, but may be changed by the user in accordance with stewardship policy.	
Staff time	*Hours:*	Enter number of hours each staff type will spend annually. Include time spent communicating with landowner and/or neighbors, reviewing reserved rights, following up on problems or questions that arise during the monitoring visit, etc.
Communications/ outreach	*Hours:*	Enter number of hours each staff type will spend on communications and outreach activities (e.g., newsletters, brochures, events).
	Expenses:	Enter cost of printing, mailing, supplies for events and other expenses.

[53] Doscher et al. 2007.
[54] Doscher et al. 2007

enforcement will be needed and, therefore, difficult to estimate potential costs. The Alliance reports that "an easement enforcement action (not necessarily litigation) can easily cost $2,500 or more, and litigated enforcement actions can run much higher, potentially into the hundreds of thousands of dollars."[55] A 2013 study by the Vermont Law School and the Alliance estimates that a routine defense of a conservation easement could cost a minimum of $35,000 if the case were decided on summary judgment, $50,000 if it went to trial and $50,000 for an appeal in either case.[56]

It's important to keep in mind the location and size of the site because it may influence the likelihood of violations. For example, wetland mitigation sites can be small and located in urban or suburban settings, thereby increasing the risk of violations and resulting in "higher than normal enforcement costs for mitigation sites held in fee."[57] Easements on mitigation properties may be more prone to violation because they are enacted as a result of regulatory requirements rather than voluntary actions and, as such, the property owner may not always share the easement holder's conservation ideals.[58] Similarly, when a property protected by a traditional easement changes hands, the likelihood of violations increases, as subsequent owners may not understand or value the easement restrictions as fully as the original property owner.

Specific costs may include:

- Staff and volunteer time (e.g., discussions with the landowner, site visits, consultation with board and staff members, communication with legal counsel, documentation and managing public relations)
- Legal fees
- Expert advice/consultants
- Coordination with regulatory agencies (for mitigation projects)

There are generally two approaches to calculate the amount to set aside for legal defense: A) setting aside a fixed amount for each property as a contribution to a pooled legal defense fund, or B) calculating the average annual cost of a potential enforcement action.

A. One approach is to determine a lump sum to set aside for legal defense for either a conservation easement or fee property, based on recommendations of the Land Trust Alliance. In 2015, the Alliance updated its recommendations for the minimum legal defense reserves needed by a land trust. They created a tool for land trusts to calculate the adequate minimum reserve needed for a portfolio of easements and fee properties. The Legal Defense Reserves Calculator is based on robust actuarial data on more than 22,000 challenges from more than 400 land trusts and uses complex models to consider how various risk factors affect the likelihood and severity of challenges.

   The minimum recommended legal fund reserve consists of a base fund, covering the first 15 parcels of the land trust, plus a per parcel addition to cover additional risk as the portfolio grows. It should be noted that the calculator yields the *minimum* adequate reserve. The Alliance cautions that "each land trust board is responsible for looking beyond the minimum amount to use its own best judgment to determine any higher actual amount needed for its own land trust's defense requirements."[59] The calculator takes into account the following:

   - A few states have higher than average claim frequencies per parcel, thereby increasing risks to land trusts. These states include California, New York, Florida and New Jersey.
   - Land trusts operating in rural areas have fewer lawsuits and spend less money on legal

[55] Ibid.
[56] Vermont Law School Land Use Institute & LTA 2013.
[57] ELI 2012.
[58] Ibid.
[59] Land Trust Alliance. 2015. Calculating Minimum Legal Defense Reserves for Land Trusts. Land Trust Alliance Conservation Defense Initiative, www.landtrustalliance.org/topics/conservation-defense.

expenses. In urban and suburban areas, challenge frequencies per parcel are almost 50 percent higher than rural areas, and the average external challenge costs are almost 90 percent higher.

- Risk increases with time. The risk that a land trust will be involved in a lawsuit jumps after five years of operation.
- Challenge rates matter. Land trusts that have had three or more legal challenges within a five-year period are at a higher risk of another challenge.
- Challenge severity matters. Land trusts that have had a challenge that cost more than $10,000 within the previous five years are more likely to encounter another costly challenge.

The Legal Defense Reserves Calculator calculates the minimum reserve needed for a portfolio of properties. **We recommend that a land trust use the Legal Defense Reserves calculator to determine how much the proposed project will increase the minimum reserve needed**. This may be done by running the calculator with and without the proposed project included in the portfolio. The difference in these two amounts represents the additional amount needed in the minimum reserve due to the proposed project. That amount can be entered in the stewardship calculator as the lump sum contribution to the legal defense fund.

The tool is available to Alliance members here: http://tlc.lta.org/calculator. Non-members can request access by emailing tlc@lta.org.

B. Another approach for determining the annual cost of legal defense is to calculate the estimated costs associated with an enforcement action. In a 2007 paper, Kihslinger et al. presented this approach, assuming there will be an enforcement action for a given site every eight years on average. The cost of staff time and legal fees associated with that action can be estimated, and then one-eighth of the total cost is used as the annual estimate.[60]

Clearly there are limitations to this approach, as the actual likelihood of an enforcement action may vary significantly based on the factors discussed above, and the costs of an enforcement action are difficult to predict in advance. It should be noted that while the eight year interval may be used to estimate annual spending, an organization receiving funds for a mitigation property should ensure they will minimally have access to the total amount of funds estimated for a legal action, if necessary (i.e. not 1/8th of the funds). Therefore, this approach should be used with caution.

In 2011, the Alliance formed the Terrafirma Risk Retention Group LLC to help land trusts insure against legal challenges to easements or fee-owned land. Terrafirma is "a safety net that helps pay for the cost of litigation for covered claims, including legal costs, expert costs and court fees."[61] This insurance coverage is designed to *supplement* the minimum adequate reserves maintained by land trusts, which must cover premiums, deductibles and exclusions from coverage. Since insurance mitigates the costs of risk, the Legal Defense Reserves calculator gives credit to land trusts that have Terrafirma insurance, lowering the minimum adequate reserve accordingly. The annual premium for land trusts participating in Terrafirma is $60 per conservation easement or fee-held property before any discounts, with a deductible of $5,000. The maximum claim is $500,000. Further details on Terrafirma can be found at www.terrafirma.org.

[60] Kihslinger, R., J. Wilkinson, P. Hough, and S. Teresa. 2007. Taking on the Long-Term Stewardship of Wetland Mitigation Sites. National Wetlands Newsletter. Environmental Law Institute, Washington, DC. Vol 29 (3): 29-32.

[61] LTA 2015.

Land trusts typically take one of two approaches to set aside funds for enforcement. Many land trusts plan for funding of legal defense to come from the overall stewardship fund. Other land trusts have a separate dedicated fund for legal defense.[62] Most commonly, organizations pool funds for legal defense, with money added to the fund with the acquisition of each easement or fee-owned property. Such pooled funds can be used in defense of any of the properties in the portfolio. Other organizations keep funds separate for each property. The pros and cons of each approach have been discussed elsewhere.[63]

Holders of easements on mitigation properties should get a contribution to their legal defense fund for taking on such an easement. These funds may be set aside following either of the models discussed above. Regulatory agencies may prefer that legal defense funds be tracked separately for mitigation properties.

Regardless of how land trusts choose to structure their legal defense funds, whether combined with or separate from stewardship funds, pooled for all properties or kept separately, the Alliance's Legal Defense Reserves Calculator can be used to determine how much to set aside.

The stewardship calculator was designed to allow users to choose whether to use a lump sum amount for contribution to the legal defense fund (Option A) or to estimate costs associated with potential future legal defense (Option B). Recognizing the difficulties of estimating how often legal defense may be necessary and the costs associated with particular legal actions, it is recommended that users select Option A.

Additional resources on risk management for nonprofits can be found here:

- Land Trust Alliance Conservation Defense — www.landtrustalliance.org/topics/conservation-defense
- *A Guide to Risk Management for Land Trusts* (available to LTA members at http://tlc.lta.org/library/documents/35980; non-members interested in learning more may purchase a hard copy or download at www.landtrustalliance.org/publication/guide-risk-management-land-trusts.
- Nonprofit Risk Management Center — www.nonprofitrisk.org

See CALCULATOR QUICK REFERENCE GUIDE – Site Protection Monitoring and Easement Stewardship Costs Sheet on page 28.

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[62] Doscher et al. 2007.
[62] Ibid.

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Site Protection Monitoring and Easement Stewardship Costs Sheet

Enforcement to correct violations		
Option A: Legal defense fund contribution	*Lump sum:*	Under Unit cost, enter lump sum contribution determined by using the Land Trust Alliance Legal Defense Reserves Calculator (www.landtrustalliance.org/topics/conservation-defense). The Legal Defense Reserves Calculator calculates the minimum reserve needed for a portfolio of properties. We recommend that the calculator be used to determine how much the proposed project will increase the minimum reserve needed. This may be done by running the calculator with and without the proposed project included in the portfolio. The additional amount needed is the lump sum contribution. This is a one-time contribution made up front, so an Annual Cost is not calculated. The entire lump sum is carried over to the Summary tab.
Option B: Legal defense costs	*Staff time:*	Enter number of hours each staff type will spend on enforcement and legal challenges.
	Travel expenses:	Enter number of trips, overnight stays, and allowance for meals (# of days) for site visits(s). For detailed instructions, see Travel expenses under Monitoring the site protection mechanism above.
	Legal fees:	Enter total amount of legal fees estimated for one challenge, including fees for legal counsel, consultants and expert advice.
	Recurrence interval:	Defaults to eight years, but the user may change this as needed.
Legal defense insurance	*Unit cost:*	Enter cost of annual premium for legal defense insurance, prorated for an individual preserve (if applicable).

Land Management and Maintenance

Land management and maintenance includes practical activities to conserve the site's natural resources. The scope of land management and maintenance is driven by the goals and objectives set for the site, and activities are directly tied to tasks in the long-term management plan.

Land management and maintenance tasks have been grouped into three general categories:

1. Infrastructure maintenance
2. Ecological management
3. Occupancy costs

If in-house expertise or capacity is lacking for specific land management activities, costs should be estimated for contracting those services. Be sure to include time for staff oversight if management activities are contracted to a third party, including time spent soliciting bids, finalizing contracts, overseeing the work and approving payments. The calculator is designed to allow costs to be estimated for work done in-house, with line items for materials and labor, or for contracted services, with line items for contract amount and staff oversight.

Infrastructure maintenance and replacement

This category includes maintenance of structures on the site that promote or restrict public access, such as signage and fencing, as well as structures designed to support ecological functions, such as water control structures or berms. The initial construction of such structures is typically considered a capital expenditure, therefore the associated construction costs are not included in long-term management. However, all such features require some degree of periodic maintenance and, in most cases, must eventually be replaced. Those costs are estimated here.

Table 2 includes a list of structures commonly used on mitigation and conservation properties, including a brief discussion of factors that affect their unit cost and typical life expectancies. Costs depend on location, accessibility of the site, type of materials, size and many other factors. To the extent possible, guidance is provided to help the user develop a cost estimate.

In most cases, the cost of repair or replacement includes the cost of periodic inspections, materials and installation (labor of either staff or contractors). For each item, users should estimate the total cost of replacement as well as the recurrence interval (how often the item needs to be replaced). The calculator will amortize the total amount over the recurrence interval to calculate the annual cost. If appropriate, costs may be estimated separately for repairing structures such as fences, which may be repaired incrementally over time rather than being replaced entirely at one time.

Table 2. Infrastructure commonly found on mitigation and conservation properties and factors that affect unit cost and typical life expectancies.*

Infrastructure	Typical cost considerations
Fencing	Cost depends on the type of fence, which may be dictated by the level of public access, adjacent land uses, presence of livestock, and climate. Metal fencing may need to be repaired or replaced more often in humid or marine/estuarine environments than in drier climates.[64] The accessibility of the site influences the cost of fence repair and replacement. For example, replacing fence next to a road is cheaper than fence along a ridgetop with difficult access.
Gates, trailheads, road barriers (bollards), cave gates	Cost depends on the materials needed, which is influenced by the level of public access. In areas that receive high public visitation, or where vehicular access should be restricted, costs must be included to periodically replace structures such as gates that restrict such access. The benefit of saving costs upfront by installing less expensive structures should be weighed against the costs of more frequent maintenance and replacement over the long term.
Interpretive signs	Cost varies widely depending on size, material, and mounting base. Cost estimates should include the time needed to develop content for the sign, including graphic design. Quotes should be requested from companies that specialize in outdoor signage. Most companies provide a warranty of several years, which can be used to estimate the life expectancy of the sign.

* All costs are given as examples only, as of 2016."

[64] S. Martin, USACE Institute for Water Resources, personal communication, May 18, 2015.

Boundary/No Trespassing/ Preserve signs	Cost depends on size, material, color, stock versus custom language, and the size of the order. Price breaks are typically given for larger orders. For example, stock yellow aluminum boundary markers (3.75"x3.75") can cost nearly $1.00 each for orders of less than 50 signs, but the price drops by 75% for orders of 1000 or more. Plastic prohibitive signs (e.g. "No ATVs", red and black text, .050 gauge) can range from $0.90-4.25 each depending on the size of the sign and the amount ordered. The cost of posts and mounting hardware should also be included. For example, steel u-channel posts can vary from $13-25 each depending on material (galvanized or green), weight (1.12 lb vs. 2 lb), length, and number ordered.* Accurate cost estimates may be developed by an internet search. Generally such signs must be replaced every few years.
Hydrologic control structures, berms, weirs	Cost of maintenance, repair or replacement depends on the type of structure. If the hydrologic control structures were installed as part of initial site construction, repair or replacement costs may be estimated from initial construction costs. Typical life expectancies may be available from the engineers who completed the site design. Maintenance of berms may require periodic removal of woody vegetation and management of animals (e.g. muskrat, groundhogs, etc.) whose burrowing can affect the integrity of the berm.[65]
Trails, boardwalks	Trails through wooded areas must be cleared of brush and downed trees every year. Prairie trails must be mowed at least annually. Boardwalks need annual maintenance, especially in areas that freeze, since the freeze-thaw can damage boardwalks every winter.
Roads, bridges, culverts, parking areas.	The cost of maintenance depends on the type of infrastructure, the material, terrain, topography and environmental conditions. For example, maintenance of gravel roads may be needed once or twice a year, especially in areas of steep topography where erosion is an issue (typically around $500 each time). Maintenance of culverts may also include either exclusion of beaver or periodic removal of beaver dams or beaver themselves, to ensure unobstructed flow of water.[66]
Buildings, picnic shelters and other structures	If buildings are located on a preserve, it's essential to include the cost of annual maintenance and periodic capital improvements. Properties with buildings "incur dramatically higher costs than open space properties."[67]

* All costs given as examples only, as of 2016.

[65] Ibid.
[66] Ibid.
[67] Doscher et al. 2007.

CALCULATOR QUICK REFERENCE GUIDE
Land Management and Maintenance Costs Sheet

Infrastructure Maintenance and Replacement		
Travel expenses occurring annually	*Number of trips annually:*	Enter the number of separate round trips annually. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for annual site visit(s):	Enter the total number of nights all employees will spend for all trips annually. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for annual site visit(s):	Enter the total number of days all employees will spend for all trips annually. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Travel expenses (non-annual trips)	*Note: If additional trips are planned for tasks that will be done less than annually (e.g. once every 3 years) enter those travel expenses here. The recurrence interval defaults to 3, but this should be changed to the appropriate interval. If additional trips are planned with varying frequencies, these rows can be copied and pasted as many times as necessary.*	
	Number of trips:	Enter the number of separate round trips. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for site visit(s):	Enter the total number of nights all employees will spend for all trips. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for site visit(s):	Enter the total number of days all employees will spend for all trips. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.

Site visit	*Hours:*	Enter number of hours each staff type will spend on-site to inspect boundaries, signs and infrastructure, including round-trip travel time. If done during monitoring site visit, enter time for site visit on the Land & Easement Stewardship tab and add an explanatory note in the description here. Time on site varies depending on accessibility, terrain and habitat type.
	Recurrence interval:	Defaults to 1, but this may be changed by the user.
Remove trash and rectify trespass, vandalism	*Hours:*	Enter number of hours each staff type will spend on site annually to remove trash and address trespass and vandalism. If done during monitoring site visit, enter time for site visit on the Land & Easement Stewardship tab and add an explanatory note in the description here. Time on site varies depending on accessibility, terrain and habitat type.
	Recurrence interval:	Defaults to 1, but this may be changed by the user.
Replace fence	*If staff will perform work:*	Enter "Materials," with a description in parentheses. Enter quantity and unit cost of materials.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (how often fence will be replaced). Defaults to 1, but this may be changed by the user.
	If contractors will perform work:	Enter "Contract amount." Enter 1 under Quantity, select "ea" under Unit, and enter total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (how often fence will be replaced). Defaults to 1, but this may be changed by the user.
Replace signs	*Material:*	Add description of signs (e.g., type – boundary, No Trespassing, interpretive; size; material; mounting post). Enter quantity and unit cost.
	Labor:	Enter number of hours each staff type will spend replacing signs each time.
	Recurrence interval:	Enter recurrence interval in years (how often signs will be replaced). Defaults to 1, but this may be changed by the user.

Other tasks to consider: repair fence; repair gate; replace gate; maintain hydrologic control structure; maintain buildings; maintain roads, culverts, bridges; maintain parking area; maintain trails; maintain boardwalks; other	*Task:*	Select additional tasks as needed from the drop-down list. Choose "Other" if desired task is not on list, and add details in the description field.
	If staff will perform work:	Enter "Materials," with a description in parentheses. Enter Quantity and Unit Cost of materials.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (defaults to 1). If task will be done less than annually (e.g., once every 3 years), Material and Labor costs should reflect the total cost of work that will be completed every third year.
	If contractors will perform work:	Enter "Contract amount." Enter 1 under Quantity, select "ea" under Unit, and enter total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter Recurrence Interval in years (defaults to 1). If task will be done less than annually (e.g. once every 3 years), Contract and Staff oversight costs should reflect the total cost of work that will be completed every third year.

The maintenance of infrastructure requires periodic site visits to inspect boundaries, signs and other infrastructure. This may be done during the routine monitoring of the site to ensure its protection. If site visits for these tasks are combined, enter time associated with the site visit on the Land & Easement Stewardship tab and add an explanatory note on the Land Management & Maintenance tab.

Time spent to mark and maintain boundaries, collect trash and remediate vandalism is included in this category as well, which is necessary at least every few years on fee-owned properties.

Routine trail maintenance is essential. © The Nature Conservancy (Mark Godfrey)

Skidsteer loader, piling trees that were cut to open up a prairie at the Conservancy's Central Platte River preserve in Nebraska. © The Nature Conservancy (Chris Helzer)

Equipment Costs

Another important cost that must be captured is the cost of equipment needed to perform land management. This may include trucks, UTVs, tractors, mowers, trailers and other heavy equipment. The purchase of such vehicles and equipment is typically considered a capital expense, given that they will last more than a few years, as opposed to small equipment, such as chainsaws, that must be replaced more frequently (discussed under Supplies on page 47).

The long-term manager should determine the level of expense that qualifies as a capital expense.[68] For example, the Conservancy considers purchase of equipment greater than $5,000 to be a capital expense. The costs of such capital expenses should generally be entered here; however costs for equipment specific to a particular task may be entered with the material costs for that task if preferred. If the task that requires this equipment is being performed by a contractor and the equipment costs are included in the cost of the contract, they do not need to be accounted for here.

The cost of renting or purchasing and maintaining equipment is captured in two ways in the calculator:

1. Equipment daily use rate
2. Equipment replacement cost

Equipment Daily Use Rate:

The daily use rate accounts for the cost of using and maintaining equipment that has already been purchased but is not yet ready to be replaced. Costs such as fuel, oil, filters, tires and other common maintenance tasks should be included in the rate. The daily use rate can also be used to estimate the cost of renting equipment. Enter the number of days the equipment is expected to be used annually as the quantity, and the daily use rate as the unit cost. If hourly rates rather than daily rates are available for particular equipment, determine how many hours per day the equipment would typically be used and multiply that number by the hourly rate to determine a daily rate. For example, a tractor with mower may be used for five to six hours a day, taking into account the

[68] Doscher et al. 2007.

time needed to mobilize in the morning and clean off any debris, mud or seeds at the end of the day.

Equipment Replacement Cost:
The equipment replacement cost is the annualized cost of the capital expense — the total cost divided by the life expectancy of the equipment. If a piece of equipment is used on more than one property, estimate the percent of time the equipment will be used on this property and enter that number as the quantity. For example, for a truck that is used 25 percent of the time on a particular preserve, enter 0.25 as the quantity. The annual cost of equipment replacement will then be calculated based on the quantity, the unit cost and the recurrence interval.

Replacement cost estimates, average life expectancies and daily rates for equipment rental should be determined by contacting local retailers. As a general rule of thumb, CNLM found that "vehicles are typically driven for an average of eight years in a preserve setting" before requiring replacement, but this may vary depending on the intensity of use.[69]

See the CALCULATOR QUICK REFERENCE GUIDE – Land Management and Maintenance Costs Sheet on page 36.

Ecological management

This category includes management activities necessary to maintain the ecological values for which the site was preserved. Affirmative obligations for easements (the requirement to conduct specific activities on the property) are included here as well. Just because a property is protected with an easement doesn't guarantee preservation of its ecological values and functions, and ongoing habitat management is often needed. **To ensure management strategies keep pace with evolving best practices, time should be allocated for updating the management plan on a regular basis, typically every five years**.

The cost of ecological management varies depending on the type of habitat and its condition. Some sites require relatively little ecological management, such as mesic hardwood forests in Ohio where the primary long-term management activity involves the land managers applying herbicide to control invasive Asian bush honeysuckle seedlings every three years.[70] On the other hand, fire-dependent ecosystems, such as long-leaf pine savannas in the southeast U.S., require annual prescribed fires to maintain their ecological integrity. Sites that required more intensive initial restoration activities, as is often the case on mitigation sites, may require more maintenance later, for example to control invasive species until the native vegetation becomes established or to mechanically remove undesirable woody vegetation in the understory until the native vegetation is mature enough to withstand prescribed fire.[71]

Ecological monitoring

Under the 2008 Mitigation Rule, mitigation sites are required to have a minimum of five years of monitoring to track progress toward achieving ecological performance standards. After performance standards have been met, ongoing monitoring of appropriate chemical, physical and biological metrics may be required by the permitting agencies. The requirements for long-term monitoring should be documented in the long-term management plan. Ecological monitoring may also be necessary for voluntary conservation projects, to assess the success of management practices such as invasive species control and prescribed fire and to determine if adaptive management is needed. Factors to be monitored may include population status and trends, habitat development and condition, and extent of invasive species. Monitoring results may be used to determine the timing and extent of management activities, and may inform whether adjustments to the long-term management plan are needed. Steve Martin, with the USACE Institute for Water Resources, notes that "more intensive monitoring may be required for those systems that require active management to sustain them. For

[69] CNLM 2004.
[70] D. Schenk, Mitigation Program Manager, Ohio Field Office, TNC, personal communication, May 1, 2015.
[71] Kihslinger et al. 2007.

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Equipment Costs		
Common equipment to consider:	Vehicle, UTV, Tractor, Mower, Trailer, Fire engine with pump, Bulldozer, Plow, and Backhoe	
Equipment daily use rate	*Quantity:*	Enter number of days equipment will be used annually.
	Unit cost:	Enter daily use rate or rental rate. If hourly rates rather than daily rates are available for particular equipment, determine how many hours per day the equipment would typically be used and multiply that by the hourly rate to determine a daily rate. Add a note in the description stating the hourly rate and the hours per day that were used to calculate the daily rate.
	Recurrence interval:	Defaults to 1 year.
	Other (select from drop-down list):	This row may be copied and pasted as many times as needed. After pasting row, enter description of equipment in the cell to the right of description field if necessary.
Equipment replacement	*Quantity:*	Enter number of each type of equipment. If a piece of equipment is used on more than one property, estimate the percent of time the equipment will be used on this property and enter that as the quantity. E.g. for a truck that is used 25 percent of the time on this property, enter 0.25 as the quantity.
	Unit cost:	Enter replacement cost of equipment.
	Recurrence interval:	Enter life expectancy of equipment. Defaults to 1, but this may be changed by the user.
	Other (select from drop-down list):	This row may be copied and pasted as many times as needed. After pasting row, enter description of equipment in the cell to the right of description field if necessary.

instance, monitoring at regular intervals (ranging from every one to five years) may be required for pine savannah mitigation sites in the Gulf Coast region to evaluate whether ongoing prescribed burning ensures maintenance of these fire-dependent systems."[72]

For species conservation banks designed to offset impacts to threatened and endangered species, the extent of required monitoring depends on the species being conserved. Table 3 illustrates examples of monitoring requirements for three species in California, showing the range of monitoring methods and frequency.

In addition to completing the monitoring field work, it is important to also budget for data analysis and preparation of monitoring reports for submittal to regulatory agencies. The amount of information and necessary detail depends upon the nature of the mitigation project and monitoring requirements. It may be beneficial to provide the regulatory agencies with a format or template for long-term monitoring reports along with the long-term management plan so expectations are clear, and the long-term management budgets can be adjusted accordingly.

*Jemez Mountain salamander (*Plethodon neomexicanus*) in Santa Fe National Forest, New Mexico. © Karine Aigner*

Table 3. Example monitoring requirements for three species in conservation banks in California.[73]

Species	Long-Term Species Monitoring		Other Monitoring Required
	Method	Frequency	
Giant garter snake	Aquatic trapping	Every 5 years	Water control system, vegetation, invasives, sediment, water quality, etc.
California tiger salamander	Dip net or beach seine (3 surveys in each survey year)	Every 3 years	Vegetation, pathogens, etc.
Gopher tortoise	100% survey	Every 10 years	Invasive plants (annual), red imported fire ants (after burns), fire fuel, etc.

[72] Martin 2015 forthcoming.
[73] DeYoung & Polin 2015.

"Monitoring reports can be short and simple narratives describing management activities over the monitoring period to more complex reports that provide analysis of collected data to help determine whether a project is continuing to perform as intended or remedial actions are needed. The frequency of reports can vary widely as well.... Digital reporting to reduce the need for physical storage of reports should be the norm especially in an era of increased transparency."[74]

The long-term management plan should lay out the type and frequency of monitoring, as well as any reporting requirements, based on the site's objectives. This holds true for mitigation sites and conservation properties alike.

Monitoring of ecological conditions is generally considered a separate task from site protection and easement monitoring. If site visits for these monitoring tasks are combined, enter time associated with the site visit on the Site Protection Monitoring & Easement Stewardship tab and add an explanatory note in the Land Management & Maintenance tab. On the other hand, if ecological monitoring is planned for more than one factor, with different timing and frequency for each monitoring event, the ecological monitoring rows can be copied and pasted as many times as necessary to accommodate the monitoring needs.

See CALCULATOR QUICK REFERENCE GUIDE — Land Management and Maintenance Costs Sheet on page 39.

Invasive and nuisance species control

Control of invasive plants

Based on the resources being conserved and the objectives for a particular site, the long-term management plan should identify the invasive species to be controlled, as well as those species that should be monitored for early detection and rapid response efforts. Most control efforts focus on invasive plants because it's more possible to control them than other types of invasive species, such as insects, animals or diseases. Control of invasive or nuisance wildlife, such as feral swine, is discussed in more detail below.

The cost of controlling invasive species depends on the species of concern, the degree of infestation, the level of control required or desired, and the likelihood of reinfestation. Controlling an invasive species early can make it easier (and therefore less costly) to manage the land in the future, so early detection and rapid response of emerging invasives is particularly important. If an LTMP requires complete eradication of an invasive species, as compared to control below a threshold of 15%, for example, it will be much more difficult and expensive. In addition, the presence of invasive weeds upstream of a wetland or stream restoration increases the possibility of reinfestation after initial eradication onsite has been completed, thereby increasing the need for monitoring and future treatment.[75]

There are a number of different methods for controlling invasive species, including the use of herbicide, mechanical removal (cutting, mowing), prescribed fire, grazing and flooding. In some cases, a combination of methods and repeated treatments may be necessary to achieve the desired level of control.

[74] Martin 2015 forthcoming.

[75] Teresa, S. 2009. Perpetual Stewardship Considerations for Compensatory Mitigation and Mitigation Banks. Stetson Law Review 38:337-356.

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Ecological Management		
Travel expenses occurring annually	*Number of trips annually:*	Enter the number of separate round trips annually. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for annual site visit(s):	Enter the total number of nights all employees will spend for all trips annually. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for annual site visit(s):	Enter the total number of days all employees will spend for all trips annually. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Travel expenses (non-annual trips)	Note: If additional trips are planned for tasks that will be done less than annually (e.g. once every 3 years) enter those travel expenses here. The recurrence interval defaults to 3, but this should be changed to the appropriate interval. If additional trips are planned with varying frequencies, these rows can be copied and pasted as many times as necessary.	
	Number of trips:	Enter the number of separate round trips. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for site visit(s):	Enter the total number of nights all employees will spend for all trips. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for site visit(s):	Enter the total number of days all employees will spend for all trips. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.

Ecological monitoring	*Hours:*	Enter number of hours each staff type will spend on ecological monitoring, including time to prepare for field work, site visit time and time to write/submit report and maintain records.
	Supplies:	Enter quantity and unit cost for any supplies needed for ecological monitoring (e.g., transect posts, PVC quadrats, nets, seines, etc.)
	Recurrence interval:	Enter frequency of monitoring in years (defaults to 1). If more than one monitoring activity is planned, with different frequencies, these three rows can be copied and pasted as many times as necessary.

"Wetland mitigation projects in northeast, mid-Atlantic, and mid-West may entail ongoing control of invasive plant species like purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), and reed canarygrass (*Phalaris arundinacea*) through application of herbicides, mowing, or hydrologic management. In Hawaii, species management may entail physical removal of alien algae (e.g. *Gracillaria salicornia*) from coral reefs. Riparian systems in California may require control of the invasive giant reed (*Arundo donax*)."[76]

Because of the variability of all these factors, **the cost of invasive species control may range anywhere from $10/acre to $5,000/acre**. On the low end, annual mowing of a 40-acre grassland to prevent sweet clover from going to seed may cost around $30/acre. On the upper end, control of Asian bush honeysuckle in a mesic hardwood forest may cost more than $3,000/acre because it involves cutting and grinding the shrubs, herbiciding cut stumps and follow-up spraying of resprouts for several years.

The calculator allows users to choose whether invasive species control will be done by staff or contractors. If prescribed fire is to be the primary method of control, those costs should be included in the prescribed fire task rather than here (see page 43 for more information on prescribed fire).

See the CALCULATOR QUICK REFERENCE GUIDE – Land Management and Maintenance Costs Sheet on page 41.

Control of nuisance wildlife

Control of nuisance or invasive wildlife may be necessary if they pose a threat to the integrity of the ecological community. Deer, feral swine and beaver are the most commonly managed species.

Deer

In areas where overpopulation of deer results in excessive browse damage to vegetation, hunting programs are an integral component of habitat management. Hunting of waterfowl, small and large game (from squirrels to bear) may or may not be

[76] Martin 2015 forthcoming.

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Land Management and Maintenance Costs Sheet

Ecological Management		
Invasive species control (plants)	*If staff will perform work:*	Enter "Materials" and add a description of the materials (e.g. herbicide and supplied) to be used. Enter total cost of materials under Unit cost.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (defaults to 1). If less than annually (e.g., once every 3 years), material and labor costs should reflect the total cost of work that will be completed every third year.
	If contractors will perform work:	Enter "Contract amount" and enter 1 under Quantity and total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (defaults to 1). If less than annually (e.g., once every 3 years), contract and staff oversight costs should reflect the total cost of work that will be completed every third year.

allowed, depending on local regulations, conditions of the easement, and land trust policies. Hunting may be managed in a variety of ways, either by licensing hunters on individual properties for a fee, allowing free public hunting, entering into hunting management agreements with state fish and wildlife agencies or contracting with local hunt clubs.

Where public lands for hunting are limited, such as the mid-Atlantic, some basic long-term management responsibilities (monitoring the property, trash/debris removal, maintenance of fences and gates, mowing paths, etc.) are being assigned to hunt clubs as part of a hunting lease on a mitigation property.[77] However, hunt clubs may not be counted on to effectively reduce wildlife populations as their focus may be on hunting trophy bucks rather than does. The cost of administration of the hunt club is likely covered through membership fees and should not be included here.

On those properties where hunting is overseen by the long-term manager rather than a hunt club, costs associated with administration of the hunting program should be estimated and subtracted from any hunting license income. For voluntary conservation properties, the net cost or income should be included in the calculator. For compensatory mitigation properties, license income should not be subtracted from administration costs.

[77] S. Martin, USACE Institute for Water Resources, personal communication, May 18, 2015.

Feral swine

In many areas of the country, particularly the south and southeast, control of feral swine is an integral part of long-term management. Feral swine rooting, wallowing, tree rubbing and feeding causes erosion and destroys native vegetation, which is often replaced by invasive plants. The USDA Animal and Plant Health Inspection Service (APHIS) National Feral Swine Damage Management Program provides technical support for identifying, reporting and controlling feral swine. APHIS' goal is to suppress populations where they are large and widely distributed, and to eliminate feral swine in areas with low or emerging populations.[78]

There are a variety of control methods, including exclusion fencing, trapping and ground and aerial shooting. State laws and regulations on the various control techniques vary. Contact your APHIS Wildlife Services State Office for state-specific recommendations (www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa_program_overview/sa_contact/ct_us_states_maps3 or 1-866-4USDA-WS). The cost of feral swine control, including licenses, equipment, ammunition, traps and fences, or the cost of hiring nuisance wildlife control contractors, should be estimated as part of long-term management.

Beaver

Due to their remarkable ability to reengineer aquatic systems, beaver are increasingly an issue in mitigation projects in the eastern U.S. Many USACE districts require management or removal of beaver during the operational phase of mitigation projects. If continuing beaver management or removal is required as part of

CALCULATOR QUICK REFERENCE GUIDE
Land Management and Maintenance Costs Sheet

Ecological Management		
Nuisance wildlife control	*If staff will perform work:*	Enter "Materials" and add a description of the materials to be used. Enter total cost of materials under Unit cost.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (defaults to 1). If less than annually (e.g., once every 3 years), material and labor costs should reflect the total cost of work that will be completed every third year.
	If contractors will perform work:	Enter "Contract amount" and enter 1 under Quantity and total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (defaults to 1). If less than annually (e.g., once every 3 years), contract and staff oversight costs should reflect the total cost of work that will be completed every third year.

[78] USDA Animal and Plant Health Inspection Service (APHIS). 2015. Feral Swine. www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/operational-activities/feral-swine (last visited February 24, 2016).

long-term management, the expense of such management should be estimated. Costs may include exclusion fencing, dam or lodge removal, trapping, relocation or shooting. However, if suitable habitat exists, beaver are likely to recolonize an area after removal, so the benefits of ongoing management must be weighed against the costs. Laws regarding beaver control vary from state to state, so state departments of natural resources should be consulted to determine allowable practices and required licenses or permits.

Prescribed fire

Communities such as long-leaf pine savannas, oak savannas and prairies (along the continuum of wet to dry) require periodic fire to maintain their characteristic composition and structure. The return interval of prescribed fire can vary from one to four years for pine savanna to eight to ten years or more for mesic hardwood forest. The desired fire return interval for a particular site should be identified in the long-term management plan.

The costs associated with prescribed burning include crew training, developing and updating the burn plan, time involved in coordinating with local fire departments and neighbors (if necessary), creating fire breaks, implementation of the burn, follow-up monitoring to evaluate performance and long-term maintenance of fire breaks. Especially in urban and suburban areas, incompatible adjacent land uses and air quality non-attainment areas may restrict the timing of prescribed burns and will increase costs related to planning and conducting burns.[79]

In-house fire programs

Some organizations maintain their own fire program. For example, the Conservancy has an extensive fire program, with highly skilled burn crews trained to conduct burns on Conservancy preserves, as well as on sites owned by partner organizations. Developing a fire program from the ground up is an expensive proposition, with significant time and money needed to develop a trained professional burn crew and purchase vehicles, equipment and personal protective equipment (PPE). It can take ten years for a crew member to complete the necessary coursework, on-the-job experience and special training assignments to progress from the basic Fire Fighter Type 2 position to a Burn Boss. Once a fire program is established with staff qualified at the range of levels needed (from crew members to squad bosses to burn boss), there are costs associated with annual training to maintain certification, as well as ongoing training necessary for individuals to advance to the next level of certification. The costs of maintaining a fire program may be justified by the benefits of having a core team of long-term, competent fire staff with experience burning the same properties over time. This not only ensures safer burns and quick response to wildfires, but also increases credibility with local and state management agencies.[80,81]

The cost of a prescribed burn varies considerably and depends more on the number of people and equipment needed to safely conduct the burn than on the acreage of the burn unit. Blane Heumann, the Conservancy's Director of Fire Management, explains that "it takes about the same amount of time and effort to do a day's worth of burning for 20 acres as it would for 200 acres." On fire-dependent sites that have had many years of fire exclusion, such as grass-dominated ecosystems in the southeast U.S., when fire is first reintroduced the burn units are necessarily smaller due to the heavy fuel loads. Zachary Prusak, Fire Manager for the Conservancy's Florida Chapter, recalls that at the Disney Wilderness Preserve, the burn units were initially 40-80 acres in size. Now, after 20 years of burning, "we routinely burn 1,000 to 2,000 acres at a time, effectively lowering our burn day cost for any given year, since we burn on less days, but get more acreage burned." The calculator estimates the cost of a burn using a lump sum for all activities associated with the burn (or a "burn day" cost), rather than a per acre cost.

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[79] DeYoung & Polin 2015.

[80] Z. Prusak, Florida Fire Manager/Central Florida Conservation Director, TNC, personal communication, Sept. 29, 2015.

[81] C. Bladow, Fire Manager/Southern Indiana Stewardship Director, TNC, personal communication, Sept. 29, 2015.

It may be difficult to estimate the cost of a burn on an individual site because, as Heumann notes, many organizations "tend to spread burn costs among different conservation project budgets, using percentages of regular staff, short-term employee hires, volunteers and labor trade agreements with government partners." However, fire managers should be able to **estimate a cost per burn for a site, which, when divided by the desired fire return interval, will give an annual average cost for burning**.

One approach for developing a cost estimate for a burn on an individual site is to take the overall annual budget for the fire program for your organization and divide that figure by the number of burns planned for that year. **When estimating the cost of a burn, the largest expenses will be staff time and transportation**. The total cost should also include vehicles and heavy equipment (fire engines, trucks, skid units, UTVs with trailers), fire cache supplies, repair/maintenance, Nomex/PPE, insurance and training costs. The repair and replacement costs for vehicles and heavy equipment should be captured in the calculator either under Equipment daily use rate or replacement or included in the cost of prescribed burning, but take care not to double-count those costs.

The average cost per burn varies widely, depending on the complexity of the burn. It's difficult even to come up with a range of cost estimates for various habitat types, as Zachary Prusak points out: "I've seen fires go incredibly well in the most difficult scrub habitat, and then I have seen fires escape from an "easy" bahia grass pasture fire!" As a general example though, the Conservancy's Florida Chapter budgets about $4,000-5,000 per burn (generally conducting 30-60 prescribed fires annually in grass-dominated habitats)[82], while the Indiana Chapter estimates a cost of approximately $6,300 per burn (conducting 10-15 burns annually in woodland, savanna, glade and prairie habitats).[83]

Contractors

In some cases, land managers may decide that it makes better economic sense to hire contractors to perform prescribed burning on their properties, rather than investing in an in-house fire program. This may hold true for a land trust with a small number of properties that require only infrequent burns. In this case, cost estimates for a burn on a particular property can be requested from potential contractors and entered in the calculator along with staff oversight time.

Prescribed burns conducted by contractors can range from several thousand to $10,000 for a burn, depending on site specifics and degree of difficulty. Such contracts are usually paid upon completion of the burn or series of burns.[84] The cost of property liability insurance will increase due to the high risk associated with burning and should be included under Occupancy costs. Care should be taken when estimating contract costs to ensure that adequate funds are set aside in case the work must instead be done using in-house staff.

Prescribed fire in long-leaf pine forest. © Carlton Ward Jr.

[82] Z. Prusak, Florida Fire Manager/Central Florida Conservation Director, TNC, personal communication, Sept. 29, 2015.
[83] C. Bladow, Fire Manager/Southern Indiana Stewardship Director, TNC, personal communication, Sept. 29, 2015.
[84] B. Heumann, Director of Fire Management, TNC, personal communication, Sept. 25, 2015.

Nelwyn McInnis, with the Louisiana Chapter of the Conservancy, cautions "when we first got into banking for pine savanna habitats, which are fire-maintained, our budget was based on the state forestry department doing the burns for us. That did not come to pass, as they were too busy, so we had to develop our own fire team. In addition, the training requirements, due in part to insurance requirements, has steadily gone up, which has increased the cost over the years. Thus the endowment amounts we set aside early on are not meeting all of our costs due largely to this issue."[85]

CALCULATOR QUICK REFERENCE GUIDE
Land Management and Maintenance Costs Sheet

Ecological Management		
Prescribed fire	*Cost of burn:*	*Quantity:* Enter number of burns to be done in a year.
		Unit Cost: Enter lump sum cost of burn, including burn plan development, implementation of burn and follow-up monitoring. Cost of fire cache supplies, PPE and other equipment can either be included here or in their respective separate categories. If contractors are used, enter contract amount for unit cost. For "Staff oversight," enter number of hours each staff type will spend to oversee the contract.
		Recurrence interval: Enter fire return interval in years (defaults to 1).
	Annual training:	*Quantity:* Enter 1 lump sum.
		Unit cost: Enter total cost of annual training and recertification of fire crew for the property. If fire crew is used on more than one property, divide the overall annual budget for training by the average number of burns in a year.
		Recurrence interval: Defaults to 1.

[85] N. McInnis, Mitigation Program Manager, Louisiana Field Office, TNC, personal communication, June 12, 2015.

Habitat management

The long-term management plan should identify additional habitat management that may be necessary to maintain the target ecological community, species and resource functions. In the case of wetland mitigation, this section is intended to capture those activities needed for ongoing management of the site after the site has been determined by the permitting agency to have fulfilled its ecological performance standards.

For voluntary conservation properties, costs associated with restoration activities are typically not included as part of routine long-term stewardship. Rather, restoration costs are included either as start-up costs or are covered by additional sources of funding, such as grants. This section is intended to include only those costs associated with long-term habitat management after any restoration has been completed. For compensatory mitigation properties, long-term habitat management may be required and any associated costs should be estimated.

Habitat management may include vegetation management (woody successional control, removing undesirable species), thatch management, grazing, mowing and much more. In fire-dependent ecosystems, such as savannas and prairies, undesirable woody vegetation in the understory may need to be mechanically removed for several years until the native vegetation is

CALCULATOR QUICK REFERENCE GUIDE
Land Management and Maintenance Costs Sheet

Ecological Management		
Habitat management (select from drop-down: grazing (management of lease); hunting (management of licenses); vegetation management; other)	*Task:*	Select tasks as needed from the drop-down list. Choose "Other" if desired task is not on the list and add details in the description field. For voluntary conservation projects, if income-generating activities such as hunting, fishing, or agricultural leases result in a net income, that may be entered as a negative number.
	If staff will perform work:	Enter "Materials," with a description in parentheses. Enter quantity and unit cost of materials.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (defaults to 1). If task will be done less than annually (e.g., once every 3 years), material and labor costs should reflect the total cost of work that will be completed every third year.
	If contractors will perform work:	Enter "Contract amount" and enter 1 under Quantity and total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (defaults to 1). If task will be done less than annually (e.g., once every 3 years), contract and staff oversight costs should reflect the total cost of work that will be completed every third year.

mature enough to withstand prescribed fire. Forested wetlands in the eastern U.S. may require silvicultural treatment to release desired tree species from competition.[86] In vernal pools in the western U.S., excessive thatch may be detrimental to the targeted species of conservation banks. In banks created to conserve the giant garter snake, cattails must be controlled.[87]

Grazing can be a surrogate for prescribed burning in areas where burns are not allowed, such as air quality non-attainment areas.[88] Grazing is often leased out, and the staff time associated with lease management and coordination with the lessee must be estimated.[89] For compensatory mitigation properties, lease or grazing income should not be incorporated into the calculations. However, for voluntary properties the stewardship calculator allows for lease income to be subtracted from the cost of lease management and the net cost can be entered in the calculator. Additionally, if grazing will result in net income on voluntary conservation properties, that figure can be entered in the calculator as a negative amount, which will apply a credit to the annual cost subtotal.

Supplies

Supplies include small equipment and supplies subject to wear and tear that must be replaced regularly, such as chainsaws and brush cutters. This should be distinguished from large equipment that will last more than a few years, which is considered a capital expense and should be included under equipment replacement. The land trust should determine the level of expense that qualifies as a capital expense. For example, the Conservancy considers equipment greater than $5,000 to be a capital expense. Equipment costs under $5,000, or the expense level for a capital expenditure, should be recorded here.

CALCULATOR QUICK REFERENCE GUIDE
Land Management and Maintenance Costs Sheet

Ecological Management		
Common supplies to consider:	Chainsaw, Brush cutter, Leaf blower, Backpack sprayer, Fire cache (Pulaski, flapper, shovel, rake, drip torch, water pack with trombone sprayer, hose, portable pump, portable radios, etc.), and PPE (gloves, helmet, earplugs, Nomex, fire shelter, etc.)	
Supplies	*Quantity:*	Enter 1. However, if supplies are typically included in the organization's overall land stewardship operating budget, rather than allocated to individual preserves, estimate the percent of time the supplies will be used on this property annually and enter that as the quantity. The calculator will then determine the annual cost of supplies allocated to this property.
	Unit cost:	Enter total amount to be spent on supplies annually. E.g. if $500 is budgeted annually for equipment such as chainsaws and brush cutters that are used 10 percent of the time on this property, enter 0.1 as the quantity and $500 as the Unit cost.

[86] S. Martin, USACE Institute for Water Resources, personal communication, May 18, 2015.
[87] H. Holland, Senior Conservation Planner, Westervelt Ecological Services, personal communication, June 25, 2015.
[88] Martin 2015 forthcoming.
[89] H. Holland, Senior Conservation Planner, Westervelt Ecological Services, personal communication, June 25, 2015.

Occupancy costs

Occupancy costs include costs associated with property ownership, including property taxes, assessments and fees, insurance premiums, and other fees and utilities. This section should be completed by the property owner, not the easement holder or long-term steward of a property not held in fee.

Property taxes

Depending on the state, nonprofit conservation organizations may or may not be eligible for exemption from property taxes. In states where exemption is allowed, organizations may choose not to take advantage of it or may elect to make a payment in lieu of taxes. Even if conservation land is exempt, the organization still must pay assessments and special district taxes, such as drainage assessments, stormwater fees, flood control district fees and conservancy district fees.[90,91]

Insurance

Property owners should carry general liability and property insurance in a sufficient amount to cover repair and replacement of any buildings or other structures on their property and to protect against liability claims. **This is especially important for properties in more populous areas, where people may be more likely to visit and become injured, or where neighboring houses could be damaged if the property floods, catches fire, suffers insect infestations, or other situations**.

The cost of liability insurance varies widely depending on the state, the location and use of the property, deductible amount, coverage limits and other factors. If a mitigation project requires the long-term steward or easement holder to hire additional staff, contractors, or enter into business agreements, Directors and Officers insurance is essential, as that increases the likelihood that the land trust will get sued for discrimination, unfair employment practices, breach of contract, or slander. Other insurance coverage, including title insurance, environmental liability insurance and volunteer insurance may be necessary if the project is on property where there may be a title defect, is going to be placed on land that may have been polluted by a previous owner or is going to use a lot of volunteers.[92]

Insurance is usually priced by organization rather than by project and therefore may be included in an organization's administrative or overhead rate, rather than accounted for separately for an individual project. For any additional insurance coverage associated with a proposed project, cost estimates should be obtained from an insurance agent.

CALCULATOR QUICK REFERENCE GUIDE
Land Management and Maintenance Costs Sheet

Occupancy (applicable only to property owner)		
Property taxes	*Unit cost:*	Enter total amount of taxes, drainage assessments, other fees.
Insurance	*Unit cost:*	Enter total amount of property damage and liability insurance.
Other fees	*Unit cost:*	Enter fees, such as utilities (gas, electricity and water), water rights fees, etc.

[90] Teresa 2009.
[91] Doscher et al. 2007.
[92] L. Barrett, Conservation Defense Coordinator, LTA, personal communication, December 18, 2015.

Other fees

Additional costs associated with fee ownership of a site should be included here. For example, this may include ongoing annual fees associated with protecting water rights necessary to ensure the long-term sustainability of wetland hydrology for mitigation projects.

If buildings are located on the property, costs of utilities, such as water, electric, gas, phone and internet, should be estimated. These costs may be estimated from bills provided by the previous owner or by contacting utility companies.

How to Plan for Common Underestimates and Surprise Costs

> "Things will always cost more than you think; there will always be unanticipated things to do; and nothing you can do will prevent you from making at least some mistakes in your planning. The key to stewardship success is to assume something will go wrong and you'll need more money than you have to fix it."[93]

Contingency

There will no doubt be unforeseen costs in the future, whether related to legal defense, exercise of mineral rights, removal of structures, repair of damage due to vandalism or any number of other causes. Such costs are inherently difficult to predict and estimate. In addition, while inflation is accounted for in the endowment principal calculation, costs could increase unexpectedly in the future at a rate greater than the rate of inflation. This may be the case for fuel costs in particular, given the current unusually low cost of oil (as of 2016).

A contingency should be included in the annual cost of management to account for estimation errors, price fluctuations (beyond inflation) and environmental variability. **Contingency rates in the range of 10-20 percent are common, both for mitigation sites and voluntary conservation properties**.[94] **The selected rate will vary depending on individual site characteristics, the type of project (voluntary conservation vs. compensatory mitigation) and organizational considerations**. Contingency funding should be focused on addressing reasonably foreseeable, low-cost remediation or adaptive management activities, to keep long-term management funding within a practical price range.

Adaptive Management

Because nothing in nature is truly static or predictable, it's important for land managers and regulatory agencies to be flexible and adopt an adaptive management mindset. Specific management activities needed on a site may change over time based on changing environmental conditions and other unforeseen circumstances. Necessary changes may be identified as the result of routine site inspections and ecological monitoring, and should be incorporated into periodic review and revision of the long-term management plan, typically done every five years. An adaptive management approach may "better ensure that a compensatory mitigation project continues to provide the desired aquatic resource functions and services."[95] An alternative management approach may also allow for changes in the types of ecological functions and services being provided by the site, if regional or local conditions have changed so that the initially desired functions and services can no longer be provided by the site.

Adaptive management may be more important than ever as climate change continues to manifest in more severe storms, longer droughts, wetter and warmer winters and general "climate weirding" (a term coined by Deborah

[93] Doscher et al. 2007.
[94] Martin 2015 forthcoming.
[95] Ibid.

Barber, TNC).[96] **Spending as a result of adaptive management is hard to predict and, as such, is generally covered by existing long-term stewardship funds or through prioritization of management tasks if funds are not sufficient**. Funding may only allow for certain low cost climate change mitigation and adaptation strategies. In some cases, site conditions may change so dramatically that the only practical approach might be to change the site objectives for what is achievable for the changed environmental conditions.[97,98]

Administrative Costs

One of the most frequently underestimated costs is staff time, either time spent in the field or in the office on administrative tasks.[99,100] To the extent possible, this time should be adequately included in annual cost estimates for the relevant tasks. However, there are a number of administrative activities required to run a stewardship program that may not be attributed to a particular property but nonetheless should be funded by the stewardship fund. These include staff time and costs associated with "developing stewardship policies, public relations activities that are part of stewardship, maintaining records, annual budgeting, filing tax forms, hiring interns, coordinating volunteers and managing a computerized database, if applicable."[101] These costs may be estimated by calculating an administrative or overhead rate that is added to the annual long-term management costs.

A minimum administrative rate of 10 percent is recommended — this is the de minimis indirect cost rate in the 2015 Uniform Guidance for Federal Funds and was the average rate found in a sample of Property Analysis Record (PAR) estimates for mitigation projects.[102] If an organization has a Negotiated Indirect Cost Rate Agreement (NICRA) with the federal government, that rate can be used as the administrative rate.

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[96] D. Barber, Director of Land Management, Maryland Field Office, TNC, personal communication, April 14, 2015.
[97] D. Olson, Regulatory Program Manager, USACE, personal communication, May 7, 2015.
[98] Martin 2015 forthcoming.
[99] Doscher et al. 2007.
[100] N. McGoff, Director, Roseland Stewardship Corp., personal communication, May 14, 2015.
[101] Doscher et al. 2007.
[102] Martin 2015 forthcoming.

SECTION

III

MANAGING MONEY FOR THE LONG-TERM

SECTION III: MANAGING MONEY FOR THE LONG-TERM

This stewardship calculator seeks to assist project sponsors in accurately estimating the amount of money needed annually to implement stewardship tasks and preserve the ecological value of a site. However, **one must consider how those funds will be generated each year and ensure a secure source of funding is in place**. There are several options for funding long-term stewardship for voluntary conservation projects. The 2008 Mitigation Rule identifies mechanisms appropriate for mitigation projects including "endowments, trusts, contractual arrangements with future responsible parties, and other appropriate financial instruments."[103] This section discusses the most commonly used financial mechanisms, how to determine an appropriate capitalization rate in order to calculate the principal needed, different approaches to setting aside funds, and alternative funding sources.

General Principles of Stewardship Fund Tracking and Expenditures

An organization holding stewardship funds should identify principles that will guide how those funds will be spent.

Some stewardship funds for voluntary conservation projects may be established and managed as *true endowments*, and therefore subject to state law governing endowments, primarily the Uniform Prudent Management of Institutional Funds Act (UPMIFA, which has been enacted in 49 of the 50 states).[104]

More often, stewardship funds for voluntary conservation projects may be set up as *temporarily restricted funds*, where the principal can be spent for specific purposes, such as legal defense or capital expenses.

Still others for voluntary conservation projects may be established as *unrestricted funds* that the board has designated be spent for stewardship purposes. Such funds can be redirected to other purposes by a vote of the board.[105] Unrestricted funds would not be an appropriate classification for compensatory mitigation stewardship funds.

Many compensatory mitigation stewardship funds are established as permanently restricted trust assets by the organization that holds them. The restrictions governing the investment of and spending from these funds are as set forth in the applicable laws, regulations, permits, and permitting documents pursuant to which the funds were created.

For a more detailed discussion of the distinction between restricted, temporarily restricted and unrestricted funds held by land trusts, see the LTA course "Financial Management of Land Trusts."[106]

An organization managing stewardship money should also adopt a stewardship fund policy. The stewardship fund policy should specify whether stewardship funds are set aside for individual properties or pooled into one fund to be used for stewardship on all properties. Likewise, stewardship funds may be kept separate from legal defense funds, or they may be combined into one fund. There are benefits and drawbacks of each approach, but such a discussion is outside the scope of this handbook. More information can be found in the LTA course "Determining Stewardship Costs & Raising and Managing Dedicated Funds."[107]

Money to provide for long-term stewardship of compensatory mitigation projects may be pooled with an organization's other funds for investment purposes but must always be tracked separately so earnings,

[103] 33 C.F.R. §332.7(d)(3)
[104] Uniform Prudent Management of Institutional Funds Act (UPMIFA). 2006. Uniform Law Commission. http://uniformlaws.org/Act.aspx?title=Prudent%20Management%20of%20Institutional%20Funds%20Act.
[105] Doscher et al. 2007.
[106] Rowley & Sohl 2010.
[107] Doscher et al. 2007.

expenditures, and the current balance is known. Periodic reporting to the regulatory agencies on the investment performance, expenditures, and remaining balance of the long-term stewardship monies may be required.

Endowment Management and the Capitalization Rate

In general, land trusts and other managers of long-term funds invest their stewardship funds in endowments. In an endowment, the fund principal is invested in a mix of stocks, bonds, and other asset classes. The mix of investments selected will affect the target annual returns sought by a particular endowment. Land trusts and other managers of long-term funds should have established policies on the management and investment of funds. Such a policy is commonly referred to as the investment policy statement and it defines the objectives of the fund, responsibilities of the parties involved, the level of risk the fund is willing to bear, the long-term strategic asset allocation of the fund, and the spend rate.[108]

The strategic asset allocation of the fund should reflect the acceptable level of risk, based on the objectives and applicable time horizon of the fund. It is not uncommon for development of the asset allocation and management of the fund to be outsourced to an investment services provider. It is important that the roles and responsibilities of this outside entity and any associated fees be clearly articulated in the investment policy statement.

The level of risk and corresponding asset allocation will guide the development of the projected annual return of the fund. This return is commonly referred to as the nominal or gross rate of return. From this nominal rate of return, a capitalization rate or "cap rate" must be calculated. **The cap rate is the targeted nominal rate of return, less estimated inflation rates and any administrative fees. The cap rate reflects the percentage of the fund that is expected to be spent each year on long-term stewardship tasks**. **Long-term stewardship funds are intended to provide for the site for many years, possibly into perpetuity, and in order to achieve this goal it is essential to account for inflation and fees**. Further discussion on the cap rate appears below.

The administrative fees that will be charged to an endowment should be clearly outlined in the investment policy statement. In the example investment policy statement for mitigation funds held by the National Fish and Wildlife Foundation for the California Department of Fish and Wildlife (see Appendix D on page105), fees are calculated as 1 percent of the funds under management. One must make an assumption regarding the appropriate inflation rate to apply, as actual inflation rates are only known after the fact. In recent years the United States has experienced very low inflation, but because of the long time horizon of stewardship funds, inflation assumptions must be based on the long-term. In this example, the CDFW has assumed a 3 percent inflation rate. Combining this inflation rate with 1% fees and a cap rate of 3.5%, the fund's investment strategy must target a nominal annual rate of return of 7.5%.

Because the inflation rate and fees must be accounted for in calculating the cap rate, it is clear that a diversified investment strategy is essential. Indeed, **UPMIFA affirmatively states that, absent special circumstances, endowments "shall" be invested in a diversified portfolio**. While FDIC-insured accounts or U.S. government bonds are very safe investments, they generally do not result in returns high enough to outpace a 3 percent inflation rate plus applicable management fees.

[108] Coffey, G. and M. Ruff. 2016. Elements of a clearly defined investment policy statement for non-profits: An update. Russell Investments Research. https://russellinvestments.com/us/insights/articles/elements-of-a-clearly-defined-investment-policy-statement-for-non-profits--an-update.

THE CAPITALIZATION RATE AND THE INVESTMENT STRATEGY

Because the cap rate is derived from assumptions about future expected investment returns, it is critical that any cap rate be aligned with the investment strategy that is employed for the LTSF portfolio. For example, a cap rate of 3.5 percent, requiring average gross annual returns of 7.5 percent, would in turn require the execution of an investment strategy reflecting a fully diversified asset allocation,[1] such as those employed by many contemporary university endowments and pension plans.[2] In contrast, a cap rate of 1 percent would require average gross annual returns of 5 percent, which could potentially be achieved through an investment portfolio with a different, more conservative (i.e., less risky) asset allocation.

By Timothy J. DiCintio, Vice President, Impact-Directed Environmental Accounts, National Fish and Wildlife Foundation, in ELI 2012.

[1] "Fully diversified" in this sense means invested across a wide range of asset classes, including fixed income (bonds), equities (stocks) and alternative investments, such as commodities, real estate, hedge funds and private equity.

[2] *See, e.g.,* Corkery, Michael, "Calpers May Cut Target Return," Wall Street Journal, March 13, 2012 (noting that while the median state pension plan assumes an annual rate of return of approximately 8 percent, the California Public Employees' Retirement System is currently set to reduce its return target from 7.75 percent to 7.50 percent). See also annual data published as part of the NACUBO-Commonfund Study of Endowments®.

Calculating Fund Principal

The capitalization rate will determine the necessary principal amount of the fund. The cap rate multiplied by the principal should equal the amount of cash needed annually to pay for stewardship activities at the site. Therefore, the annual cash need divided by the cap rate gives the necessary principal amount.

Formulas to know:

Nominal Rate of Return
– Inflation
– Administrative Fees
= Cap Rate

$$\text{Principal} = \frac{\text{Annual Cash Need}}{\text{Cap rate}}$$

As is clear in this calculation, there is an inherent relationship between the capitalization rate and the fund principal amount. The lower the cap rate, the more conservative the investment strategy may be, but the higher the initial principal amount. With a higher cap rate, a lower principal is required, but the necessary risky investment strategy to achieve this cap rate may jeopardize the life of the fund. Because the cap rate is driven by the nominal rate of return, it may be tempting to adjust the portfolio to a riskier asset allocation to increase projected returns, allowing for a lower initial principal investment (see Table 4 below). In these circumstances **it is important to consider the appropriate level of risk for a fund of this type that is intended to last over a very long time frame**. A recent study of college and university endowments showed that 10-year returns, accounting only for administrative fees (not inflation), ranged from 5.6% to 7.2%.[109]

[109] Commonfund Institute 2016.

The relationship between cap rate and investment strategy highlights two primary competing factors. On the one hand, applying a lower cap rate increases the statistical likelihood of successful funding in perpetuity (and potentially allows for less risky investment portfolios) because it demands less investment return from the portfolio over time. On the other hand, applying a higher cap rate decreases the principal amount that must be paid upfront (because it assumes higher investment returns over time) and thus is often advocated by the permittee or payor of the funds. These competing factors reflect the risk/reward calculus inherent in determining the appropriate initial amount of the Long-term Stewardship Fund.

By Timothy J. DiCintio, Vice President, Impact-Directed Environmental Accounts, National Fish and Wildlife Foundation, in ELI 2012.

Assuming 3% inflation, these returns would translate to capitalization rates ranging from 2.6% to 4.2%. **A recent study of long-term stewardship endowments for California mitigation banks reported cap rates ranging from 2.2% to 4.5%.**[110] **These figures likely represent an appropriate range of realistic capitalization rates**.

The table below illustrates how higher cap rates allow for a lower initial principal investment, but must be balanced against a riskier investment strategy to achieve the projected rate of return.

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Table 4. Effect of different cap rates on the initial fund principal amount.

Annual Cash Need	Projected Nominal Rate of Return	Capitalization Rate[A]	Principal
$10,000	4.5%	0.5%	$2,000,000
$10,000	5%	1%	$1,000,000
$10,000	6%	2%	$500,000
$10,000	8%	4%	$250,000

[A] Capitalization rate calculated assuming 3% inflation and 1% administrative fees.

[110] Thomas, J. 2016. Evaluating Long-Term Stewardship of Compensatory Mitigation Sites: Preliminary Findings from California. National Wetlands Newsletter. Environmental Law Institute, Washington, DC. Vol 38 (2): 6-10.
[111] Martin 2015 forthcoming.
[112] ELI 2012.
[113] Doscher et al. 2007.

Different approaches to finance long-term management

For voluntary conservation projects, a contribution to the long-term stewardship fund is usually set aside when the easement or fee property is acquired, or if not, there must be a plan to secure the funds and a policy committing them to that purpose. There are a number of different approaches mitigation providers may take to finance the long-term management fund, some of which may also be applicable to conservation projects.[111,112,113]

a) **Single payment, or lump sum** — The total amount of the long-term management fund is paid at one time, either before project implementation or before the project enters the long-term management phase. This approach is the easiest to verify and carries the least amount of risk that long-term management will not be funded if the mitigation provider is unable to pay, especially if paid upon project implementation. This also allows the management fund to earn returns for several years, prior to beginning withdrawals for stewardship activities.

b) **Payment schedule** — To lessen the burden of paying a large sum into the fund up front, a schedule for incremental payments may be set up. This allows landowners of properties with donated easements to make phased payments tied to future income, such as timber sales or the settlement of an estate. Mitigation banks may use payment schedules to fund the long-term management endowment incrementally as performance standards are achieved. Release of credits may be tied to adherence to the payment schedule, and bankers may be required to fully fund the endowment either by a given year following approval of the mitigation banking instrument or before final credit release. The amount of the total principal should be increased to account for inflation over the time it takes to set aside the full fund amount, and long-term funding should be fully funded before long-term stewardship activities begin. The primary risk under this approach is that if payments are missed, the account may not be fully funded.

c) **Credit sale proceeds** — A portion of credit sales from a mitigation bank or ILF program is set aside in the long-term stewardship fund. It is advisable to specify a dollar amount, rather than a percentage, to be set aside from the sale of each credit, as credit prices may vary over time, leading to a smaller contribution to the fund than planned. Additionally, while deposits may be made into the stewardship fund with each credit sale, benchmark funding values may also be built into the credit release schedule, requiring that a certain balance is achieved prior to each release. Funding long-term management as a portion of credit sales poses the risk that the stewardship fund may not be fully-funded by the time the bank transitions into long-term stewardship as it is possible that not all of the credits will have been sold. This will likely damage the long-term viability of the fund.

d) **Conversion of financial assurances** — Other forms of financial assurances for mitigation projects that were established to guarantee completion of construction or attainment of performance standards may be reallocated to long-term management funds once those benchmarks have been achieved. However, it is important to recognize that the financial mechanism used for a construction financial assurance may not be appropriate for a long-term stewardship fund.

[114] Taken in part from Martin 2015 forthcoming.

Managed grazing at Cross Ranch Preserve, North Dakota. © The Nature Conservancy (Angie Benson)

No matter the approach used to fund long-term stewardship, it is essential to incorporate mechanisms to help ensure the spending power of the fund does not decrease over time. Below are suggestions of "buffering" mechanisms to preserve a fund's principal, particularly for mitigation projects:[114]

1) Require the responsible party (bank sponsor or permittee) to deposit sufficient funds in a separate, short-term account to cover several years of long-term management in order to allow the long-term fund to mature before making the first draw on the fund;
2) Require the stewardship fund to be fully funded for several years prior to its use to allow for several years of earnings to accrue to provide for year one of management;
3) Require contingencies for cost estimates, preferably for each management task to reflect future variability;
4) Require annual inflation adjustments to the total principal amount until the stewardship fund is fully funded.
5) Do not allow incremental draws from the fund. Some management activities such as replacement of fencing in a rural setting may only take place at longer intervals (e.g. 15-25 years). Do not allow for incremental or annual disbursement for that action, instead only allow for the full draw in the year when the task will be implemented.
6) Allow suspension or reduction in disbursements during extreme financial circumstances, so long as doing so does not neglect critical management actions such as control of invasive species.

Alternative funding sources

It may be possible to generate income from compatible uses on voluntary conservation properties, from sources such as lease revenue, timber revenue, public events and rental income. If such sources can be relied upon as ongoing income, either annually or periodically, they can be used to offset annual stewardship needs. However, since such income sources are speculative they should not be relied upon to fund long-term stewardship on compensatory mitigation sites, and therefore should not be considered in the calculation of annual stewardship costs for mitigation sites.

Land may be leased for agricultural activities, hunting and other recreational activities. Typical local agricultural lease rates may be obtained from cooperative extension agents, Farm Service Agency, or local farm management companies. Typical hunting and fishing lease fees may be obtained from local fish and wildlife agencies or hunting management companies. While both agricultural and hunting leases can generate significant income on a property, there are costs associated with administering the leases and obtaining legal review. If the lease income is greater than the cost of administration, the net

income may be included in the calculator as a credit against the total annual cost of long-term management.

Some properties may have sufficient timber resources to support sustainable timber harvests, provided that such forest management is compatible with the site objectives. If this is under consideration during acquisition, the cost of a timber inventory and appraisal could be included as either an acquisition or start-up cost, to provide an estimate of potential timber revenue. This can then be amortized over the period of time between harvests to get an annual income amount, which can be subtracted from the annual stewardship costs.

If a property lends itself to such use, income may be derived from public events such as field trips and nature camps, or rental of buildings or houses. Again, this comes with administrative costs and the increased maintenance responsibilities of a landlord.

Land managers may pursue additional sources of funding for activities that are not included as part of routine long-term management, such as restoration or invasive species control. Private landowners, including land trusts, may enroll properties into NRCS easement programs such as Wetlands Reserve Easements (WRE), a component of the Agricultural Conservation Easement Program (ACEP), the Emergency Watershed Protection — Floodplain Easement Program, or the Healthy Forests Reserve Program. Such easement programs often provide technical assistance and funding for restoration activities, in addition to payment for enrolling into the easement program.

Grants may be available from local, state or federal government agencies or conservation organizations. The Lowcountry Open Land Trust in South Carolina took an innovative approach, using a North American Wetlands Conservation Act (NAWCA) grant to fund wetland enhancement on private land on which it holds a conservation easement. The land trust partnered with Ducks Unlimited to do the restoration work, and recovered a portion of the cost of administering the grant, which was used to offset easement stewardship costs.[115] Other grant programs that fund habitat restoration, such as NFWF, have similar cost recovery options whereby land trusts can recoup administrative fees.

Photo monitoring. © The Nature Conservancy (George C. Gress)

[115] G. Budds, Director of Conservation, Lowcountry Open Land Trust, personal communication, May 21, 2015.

SECTION

IV

CONCLUSION

SECTION IV: CONCLUSION

If you've made it this far you now have a good grasp of the complexities of planning for long-term stewardship and why it should be an essential part of every conservation and compensatory mitigation project. You may even have a better understanding of the typical activities involved in long-term stewardship. Ultimately, it is our hope that this handbook provides the resources necessary to more accurately estimate the costs associated with those long-term stewardship activities so that sufficient funding is set aside to fund stewardship into the future. The stewardship calculator will serve as a valuable resource for the mitigation and conservation community to help advance the practice of long-term stewardship.

Links to additional resources are included on page 62, which provide further information on various elements of long-term stewardship planning and financing mechanisms.

Cypress restoration efforts part of a Department of Transportation (DOT) wetland mitigation project on former farmland in the Dismal Swamp, North Carolina.

SECTION

V

ADDITIONAL RESOURCES

SECTION V: ADDITIONAL RESOURCES

Model Long-term Management Plans

Long-term Management Plan templates developed by various USACE Districts may be available on the RIBITS (Regulatory In-lieu fee and Bank Information Tracking System): https://ribits.usace.army.mil.

Long-Term Management Plan template for conservation and mitigation banks in California (a good example for reference): https://www.wildlife.ca.gov/Conservation/Planning/Banking/Templates

Land Trust Alliance Resources

The Land Trust Alliance's Learning Center contains many resources for members and partners: http://learningcenter.lta.org.

Land Trust Alliance Conservation Defense: www.landtrustalliance.org/topics/conservation-defense

Land Trust Alliance Legal Defense Reserves Calculator. The tool is available to Alliance members here: http://tlc.lta.org/calculator. Non-members can request access by emailing tlc@lta.org.

Land Trust Standards and Practices

Bates, S.K. and T. Van Ryn, eds. 2006. Land Trust Standards and Practices Guidebook: An Operating Manual for Land Trusts, Volume 1 and 2, revised. Land Trust Alliance. www.landtrustalliance.org/publication/land-trust-standards-and-practices-guidebook

Bouplon, R. and B. Lind. 2008. Conservation Easement Stewardship. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance. www.landtrustalliance.org/publication/conservation-easement-stewardship

Brown, H. and A. Pitz. 2008. Caring for Land Trust Properties. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance. www.landtrustalliance.org/publication/caring-land-trust-properties

Doscher, P., B. Lind, E. Sturgis and C. West. 2007. Determining Stewardship Costs and Raising and Managing Dedicated Funds. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance. www.landtrustalliance.org/publication/determining-stewardship-costs-raising-and-managing-dedicated-funds

Ratley-Beach, L. 2009. Managing Conservation Easements in Perpetuity. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance. www.landtrustalliance.org/publication/managing-conservation-easements-perpetuity

Rowley, E. and K. Sohl. 2010. Financial Management of Land Trusts. Standards and Practices Curriculum. Ed. Sylvia Bates. Land Trust Alliance. www.landtrustalliance.org/publication/financial-management-land-trusts

Finance Resources

Coffey, G. and M. Ruff. 2016. Elements of a clearly defined investment policy statement for non-profits: An update. Russell Investments Research. https://russellinvestments.com/us/insights/articles/elements-of-a-clearly-defined-investment-policy-statement-for-non-profits--an-update.

Conservation Finance Network (http://conservationfinancenetwork.org/): a partnership between the CFN program at Island Press, Yale Center for Business and the Environment, and The Conservation Fund, with news, training opportunities, and a professional community for conservation finance.

Scodari, Paul, Steve Martin and Aaron Willis. 2016. Implementing Financial Assurance for Mitigation Project Success. Army Corps of Engineers, Institute for Water Resources. June 2011, updated March 2016. www.iwr.usace.army.mil/Portals/70/docs/iwrreports/Financial_Assurance.pdf

Uniform Prudent Management of Institutional Funds Act (UPMIFA). 2006. Uniform Law Commission. http://uniformlaws.org/Act.aspx?title=Prudent%20Management%20of%20Institutional%20Funds%20Act

APPENDIX

A

GUIDE TO USING THE CALCULATOR

APPENDIX A: GUIDE TO USING THE CALCULATOR

Checklist of things you need to have before using the calculator:

- ☐ Easement holder's and/or long-term manager's policies on stewardship funding and management of land (for easements and fee land, if applicable).
- ☐ Easement holder's and/or long-term manager's fund management and investment policy statement.
- ☐ Long-term management plan (especially for mitigation projects). This may not have been completed yet if the calculator is being used as part of the acquisition process.
- ☐ Working knowledge of stewardship activities and costs specific to your organization.

General Instructions

This calculator was designed to estimate the costs associated with managing a site after start-up activities have been completed (in the case of CEs and fee lands) and, in the case of compensatory mitigation projects, after performance standards have been met. Costs associated with start-up or initial construction and restoration must be estimated separately.

Entering data

Enter data in blue cells. White cells contain formulas which will automatically calculate amounts based on information entered in other cells. Click on individual Tasks and Descriptions for additional guidance. Add explanations of assumptions used in cost estimates or unusual circumstances in the Notes column. The corresponding LTMP task number can be entered in the Notes column if applicable.

Responsible party — Indicate the party responsible for each task where applicable on the Site Protection Monitoring and Easement Stewardship Costs and Land Management and Maintenance Costs sheets. Depending on the situation, the easement holder, fee owner and land manager may be different parties, and thereby responsible for different tasks.

Adding/deleting rows and columns

Rows may be copied and pasted where needed to add additional tasks. To copy and paste, select the rows by clicking on the row numbers on the left side (to select multiple rows, click and drag the cursor down). Right-click the selected rows and choose "Copy." Select and right-click on the row above which you want to paste the copied rows, then choose "Insert Copied Cells." After pasting, check Subtotal formulas to make sure pasted rows are included in the sums.

After all costs have been estimated for all necessary tasks, rows for unused tasks may be deleted.

Do not delete columns.

Suggested order for completing the spreadsheet

1. Assumptions
2. Site Protection Monitoring and Easement Stewardship Costs
3. Land Management and Maintenance Costs
4. Summary

Step-by-Step Instructions

CALCULATOR QUICK REFERENCE GUIDE
Assumptions Sheet

Project Information:	
Project Name	Enter name of property.
Acres	Enter acreage of property.
State (or state equivalent)	Enter state where the project is located.
Country	Defaults to US, but the user may change this.
Prepared by	Enter name of person completing calculator.
Date	Enter date calculator completed.
Unit Cost Estimates:	
Regular staff hourly rate (inc benefits)	Enter the average hourly rate, including benefits, of a regular employee likely to work on management of the property. If currently using volunteers for some tasks, estimate labor using the hourly rate for paid staff to ensure sufficient funds if staff take over volunteer responsibilities in the future. For mitigation projects, all tasks should be completed by either paid staff or contractors (entered under relevant tasks).
Short-term staff hourly rate (inc benefits)	Enter the average hourly rate, including benefits, of a short-term employee likely to work on management of the property. If short-term employees are not used, enter 0.
Enter staff type and hourly rate (inc benefits)	If additional hourly rates are needed, click the "+" to the left of row 14 to expand additional rows. Type the staff type in column A (for example, "Staff ecologist") and enter the hourly rate, including benefits, in column D.
Mileage OR cost (round-trip)	Enter either the round trip mileage in the first blue cell or the round trip cost in the second blue cell for one visit to the property.
Mileage rate	Defaults to $0.54 (2016 federal rate). The user must update the rate annually (the rate for privately owned vehicles would be most appropriate and can be found at www.gsa.gov/mileage).
Per diem (meals)	Enter an estimate of the cost of one day's meals while visiting the property. For reference, location-specific federal rates can be found at www.gsa.gov/perdiem.
Overnight lodging cost (per night)	Enter an estimate of one night's lodging while visiting the property, if appropriate. For reference, location-specific federal rates for mid-range hotels can be found at www.gsa.gov/perdiem.

Additional Rates:	
Capitalization rate	Enter the capitalization rate (i.e., cap rate, equal to annual return minus inflation and any fund management fees). A rate between 2.6% to 4.2% has been recommended.[116]
Percent of annual costs covered by fund (50% or 100%)	Defaults to 100%. Enter whether the fund will cover 50% or 100% of the annual costs (per stewardship funding policy). For mitigation projects the fund should cover 100% of the annual costs.
Contingency (10-20%)	Enter an appropriate contingency rate. A rate between 10-20% has been recommended.[117]
Administrative (recommended minimum 10%)	Enter an appropriate administrative rate. A minimum rate of 10% has been recommended.[118] If an organization has a federal NICRA, that rate may be used as the administrative rate.

CALCULATOR QUICK REFERENCE GUIDE
Site Protection Monitoring and Easement Stewardship Costs Sheet

Responsible party	Indicate the party responsible for monitoring the site protection mechanism where applicable. Depending on the situation, the easement holder, fee owner and land manager may be different parties, and thereby responsible for different tasks.	
Additional staff types	If additional staff types and hourly rates were entered on the Assumptions tab, click the "+" above column J to expand additional columns to enter hours for each staff type.	
Recurrence interval	Defaults to 1, but may be changed by the user in accordance with stewardship policy.	
Monitoring the site protection mechanism		
Preparation for site visit	*Hours:*	Enter number of hours each staff type will spend annually. Include time spent reviewing easement documents, previous reports, aerial photos, corresponding with landowners or neighbors, etc.
Travel expenses occurring annually	*Number of trips annually:*	Enter the number of separate round trips annually. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.

[116] Commonfund Institute 2016
[117] Martin 2015 forthcoming
[118] Ibid.

	Overnight stays for annual site visit(s):	Enter the total number of nights all employees will spend for all trips annually. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for annual site visit(s):	Enter the total number of days all employees will spend for all trips annually. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Travel expenses (non-annual trips)	*Note:* If additional trips are planned for tasks that will be done less than annually (e.g. once every 3 years) enter those travel expenses here. The recurrence interval defaults to 3, but this should be changed to the appropriate interval. If additional trips are planned with varying frequencies, these rows can be copied and pasted as many times as necessary.	
	Number of trips:	Enter the number of separate round trips. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for site visit(s):	Enter the total number of nights all employees will spend for all trips. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for site visit(s):	Enter the total number of days all employees will spend for all trips. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Site visit	*Hours:*	Enter number of hours each staff type will spend visiting the site annually, including travel time. Time on site varies depending on accessibility, terrain and habitat type.
Prepare and submit report, maintain records	*Hours:*	Enter number of hours each staff type will spend preparing the monitoring report following the site visit, communicating with the Corps and other regulatory agencies (for mitigation easements), and maintaining records.

	Expenses:	Enter cost of printing, copying, mailing, and other expenses related to maintenance of records (including the cost of fireproof file cabinets). Records may include long-term management plans, legal documents, monitoring reports, photos, notice of approvals and landowner correspondence (Doscher et al. 2007).
Supplies	*Description:*	Enter description of supplies (e.g. iPad/tablet, camera, GPS, aerial or satellite imagery, UAV (drone)).
	Quantity:	Enter 1. However, if supplies are typically included in the organization's overall land stewardship operating budget, rather than allocated to individual preserves, estimate the percent of time the supplies will be used on this property annually and enter that as the quantity. For example, if an iPad will be used on several properties, with approximately 10% of the time spent on this property, enter 0.1 as the quantity. The calculator will then determine the annual cost of supplies allocated to this property.
	Unit cost:	Enter total amount to be spent on supplies annually. Alternatively, an hourly or daily rate for use of supplies may be entered here, with the corresponding number of hours or days entered as the quantity. Make note of this in the description.
Maintaining landowner/neighbor relationships		
Staff time	*Hours:*	Enter number of hours each staff type will spend annually. Include time spent communicating with landowner and/or neighbors, reviewing reserved rights, following up on problems or questions that arise during the monitoring visit, etc.
Communications/ outreach	*Hours:*	Enter number of hours each staff type will spend on communications and outreach activities (e.g. newsletters, brochures, events).
	Expenses:	Enter cost of printing, mailing, supplies for events, and other expenses.

Enforcement to correct violations		
Option A: Legal defense fund contribution	*Lump sum:*	Under Unit cost, enter lump sum contribution determined by using the Land Trust Alliance Legal Defense Reserves Calculator (www.landtrustalliance.org/topics/conservation-defense). The Legal Defense Reserves Calculator calculates the minimum reserve needed for a portfolio of properties. We recommend that the calculator be used to determine how much the proposed project will increase the minimum reserve needed. This may be done by running the calculator with and without the proposed project included in the portfolio. The additional amount needed is the lump sum contribution. This is a one-time contribution made up front, so an annual cost is not calculated. The entire lump sum is carried over to the Summary tab.
Option B: Legal defense costs	*Staff time:*	Enter number of hours each staff type will spend on enforcement and legal challenges.
	Travel expenses:	Enter number of trips, overnight stays, and allowance for meals (# of days) for site visits(s). For detailed instructions, see Travel expenses under Monitoring the site protection mechanism above.
	Legal fees:	Enter total amount of legal fees estimated for one challenge, including fees for legal counsel, consultants and expert advice.
	Recurrence interval:	Defaults to eight years, but the user may change this as needed.
Legal defense insurance	*Unit cost:*	Enter cost of annual premium for legal defense insurance, prorated for an individual preserve, if applicable.

CALCULATOR QUICK REFERENCE GUIDE
Land Management and Maintenance Costs Sheet

Responsible party	Indicate the party responsible for tasks where applicable. Depending on the situation, the easement holder, fee owner and land manager may be different parties, and thereby responsible for different tasks.	
Additional staff types	If additional staff types and hourly rates were entered on the Assumptions tab, click the "+" above column J to expand additional columns to enter hours for each staff type.	
Recurrence interval	Defaults to 1, but may be changed by the user if tasks occur less than annually.	
Infrastructure Maintenance and Replacement		
Travel expenses occurring annually	*Number of trips annually:*	Enter the number of separate round trips annually. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for annual site visit(s):	Enter the total number of nights all employees will spend for all trips annually. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for annual site visit(s):	Enter the total number of days all employees will spend for all trips annually. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Travel expenses (non-annual trips)	*Note:* If additional trips are planned for tasks that will be done less than annually (e.g. once every 3 years) enter those travel expenses here. The recurrence interval defaults to 3, but this should be changed to the appropriate interval. If additional trips are planned with varying frequencies, these rows can be copied and pasted as many times as necessary.	
	Number of trips:	Enter the number of separate round trips. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.

	Overnight stays for site visit(s):	Enter the total number of nights all employees will spend for all trips. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for site visit(s):	Enter the total number of days all employees will spend for all trips. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Site visit	*Hours:*	Enter number of hours each staff type will spend on-site to inspect boundaries, signs and infrastructure, including round-trip travel time. If done during monitoring site visit, enter time for site visit on the Land & Easement Stewardship tab and add an explanatory note in the description here. Time on site varies depending on accessibility, terrain and habitat type.
	Recurrence interval:	Defaults to 1, but this may be changed by the user.
Remove trash and rectify trespass, vandalism	*Hours:*	Enter number of hours each staff type will spend on-site annually to remove trash and address trespass and vandalism. If done during monitoring site visit, enter time for site visit on the Land & Easement Stewardship tab and add an explanatory note in the description here. Time on site varies depending on accessibility, terrain and habitat type.
	Recurrence interval:	Defaults to 1, but this may be changed by the user.
Replace fence	*If staff will perform work:*	Enter "Materials," with a description in parentheses. Enter quantity and unit cost of materials.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (how often fence will be replaced). Defaults to 1, but this may be changed by the user.
	If contractors will perform work:	Enter "Contract amount." Enter 1 under Quantity, select "ea" under Unit, and enter total contract amount under Unit cost.

		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (how often fence will be replaced). Defaults to 1, but this may be changed by the user.
Replace signs	*Material:*	Add description of signs (e.g. type – boundary, No Trespassing, interpretive; size; material; mounting post). Enter quantity and unit cost.
	Labor:	Enter number of hours each staff type will spend replacing signs each time.
	Recurrence interval:	Enter recurrence interval in years (how often signs will be replaced). Defaults to 1, but this may be changed by the user.
Other (select from drop-down: repair fence; repair gate; replace gate; maintain hydrologic control structure; maintain buildings; maintain roads, culverts, bridges; maintain parking area; maintain trails; maintain boardwalks; other)	*Task:*	Select additional tasks as needed from the drop-down list. Choose "Other" if desired task is not on list, and add details in the description field.
	If staff will perform work:	Enter "Materials," with a description in parentheses. Enter quantity and unit cost of materials.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (defaults to 1). If task will be done less than annually (e.g. once every 3 years), Material and Labor costs should reflect the total cost of work that will be completed every third year.
	If contractors will perform work:	Enter "Contract amount." Enter 1 under Quantity, select "ea" under Unit, and enter total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (defaults to 1). If task will be done less than annually (e.g. once every 3 years), Contract and Staff oversight costs should reflect the total cost of work that will be completed every third year.
Equipment daily use rate	*Quantity:*	Enter number of days equipment will be used annually.

	Unit cost:	Enter daily use rate or rental rate. If hourly rates rather than daily rates are available for particular equipment, determine how many hours per day the equipment would typically be used and multiply that by the hourly rate to determine a daily rate. Add a note in the description stating the hourly rate and the hours per day that were used to calculate the daily rate.
	Recurrence interval:	Defaults to 1 year.
	Other (select from drop-down list):	This row may be copied and pasted as many times as needed. After pasting row, enter description of equipment in the cell to the right of description field if necessary.
Equipment replacement	*Quantity:*	Enter number of each type of equipment. If a piece of equipment is used on more than one property, estimate the percent of time the equipment will be used on this property and enter that as the quantity. E.g. for a truck that is used 25 percent of the time on this property, enter 0.25 as the quantity.
	Unit cost:	Enter replacement cost of equipment.
	Recurrence interval:	Enter life expectancy of equipment. Defaults to 1, but this may be changed by the user.
	Other (select from drop-down list):	This row may be copied and pasted as many times as needed. After pasting row, enter description of equipment in the cell to the right of description field if necessary.
Ecological Management		
Travel expenses occurring annually	*Number of trips annually:*	Enter the number of separate round trips annually. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for annual site visit(s):	Enter the total number of nights all employees will spend for all trips annually. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for annual site visit(s):	Enter the total number of days all employees will spend for all trips annually. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.

Travel expenses (non-annual trips)	*Note:* If additional trips are planned for tasks that will be done less than annually (e.g. once every 3 years) enter those travel expenses here. The recurrence interval defaults to 3, but this should be changed to the appropriate interval. If additional trips are planned with varying frequencies, these rows can be copied and pasted as many times as necessary.	
	Number of trips:	Enter the number of separate round trips. For example, if two staff will travel together and make one trip, enter 1. If two staff will each make one trip at different times, enter 2. Either the mileage or cost per trip entered on the Assumptions sheet will be used to calculate the cost.
	Overnight stays for site visit(s):	Enter the total number of nights all employees will spend for all trips. For example, if two employees share a hotel room for two nights, enter 2. If two employees get separate hotel rooms for two nights, enter 4. The overnight lodging cost entered on the Assumptions sheet will be used to calculate the cost.
	Allowance for meals (# of days) for site visit(s):	Enter the total number of days all employees will spend for all trips. For example, if two employees will spend two days working, enter 4 days of meals. If a day trip is planned and only half the per diem is needed (e.g. to pay for lunch), enter 0.5 for the number of days. The per diem (meals) entered on the Assumptions sheet will be used to calculate the cost.
Update management plan	*Hours:*	Include time spent updating the management plan here, typically every 5 years. For mitigation sites, include time to coordinate revisions with regulatory agencies.
	Recurrence interval:	Defaults to 5, but this may be changed by the user.
Ecological monitoring	*Hours:*	Enter number of hours each staff type will spend on ecological monitoring, including time to prepare for field work, site visit time, and time to write/submit report and maintain records.
	Supplies:	Enter quantity and unit cost for any supplies needed for ecological monitoring (e.g. transect posts, PVC quadrats, nets, seines, etc.)
	Recurrence interval:	Enter frequency of monitoring in years (defaults to 1). If more than one monitoring activity is planned, with different frequencies, these three rows can be copied and pasted as many times as necessary.
Invasive species control (plants)	*If staff will perform work:*	Enter "Materials" and add a description of the materials (e.g. herbicide and supplied) to be used. Enter total cost of materials under Unit cost.
		Enter "Labor" and enter number of hours each staff type will spend.

		Enter recurrence interval in years (defaults to 1). If done less than annually (e.g. once every 3 years), Material and Labor costs should reflect the total cost of work that will be completed every third year.
	If contractors will perform work:	Enter "Contract amount" and enter 1 under Quantity and total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (defaults to 1). If done less than annually (e.g. once every 3 years), Contract and Staff oversight costs should reflect the total cost of work that will be completed every third year.
Nuisance wildlife control	*If staff will perform work:*	Enter "Materials" and add a description of the materials to be used. Enter total cost of materials under Unit cost.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (defaults to 1). If done less than annually (e.g. once every 3 years), Material and Labor costs should reflect the total cost of work that will be completed every third year.
	If contractors will perform work:	Enter "Contract amount" and enter 1 under Quantity and total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (defaults to 1). If done less than annually (e.g. once every 3 years), Contract and Staff oversight costs should reflect the total cost of work that will be completed every third year.
Prescribed fire	*Cost of burn:*	*Quantity:* Enter number of burns to be done in a year.
		Unit cost: Enter lump sum cost of burn, including burn plan development, implementation of burn and follow-up monitoring. Cost of fire cache supplies, PPE, and other equipment can either be included here, or in their respective separate categories. If contractors are used, enter contract amount for Unit cost. For "Staff oversight," enter number of hours each staff type will spend to oversee the contract.
		Recurrence interval: Enter fire return interval in years (defaults to 1).

	Annual training:	*Quantity:* Enter 1 lump sum.
		Unit cost: Enter total cost of annual training and recertification of fire crew for the property. If fire crew is used on more than one property, divide the overall annual budget for training by the average number of burns in a year.
		Recurrence interval: Defaults to 1.
Habitat management (select from drop-down: grazing (management of lease); hunting (management of licenses); vegetation management; other)	*Task:*	Select tasks as needed from the drop-down list. Choose "Other" if desired task is not on the list and add details in the Description field. For voluntary conservation projects, if income-generating activities such as hunting, fishing, or agricultural leases result in a net income, that may be entered as a negative number.
	If staff will perform work:	Enter "Materials," with a description in parentheses. Enter quantity and unit cost of materials.
		Enter "Labor" and enter number of hours each staff type will spend.
		Enter recurrence interval in years (defaults to 1). If task will be done less than annually (e.g. once every 3 years), Material and Labor costs should reflect the total cost of work that will be completed every third year.
	If contractors will perform work:	Enter "Contract amount" and enter 1 under Quantity and total contract amount under Unit cost.
		Enter "Staff oversight" and enter number of hours each staff type will spend to oversee the contract.
		Enter recurrence interval in years (defaults to 1). If task will be done less than annually (e.g. once every 3 years), Contract and Staff oversight costs should reflect the total cost of work that will be completed every third year.

Supplies (e.g. chainsaw, brush cutter, leaf blower, backpack sprayer, fire cache, PPE, etc.)	*Quantity:*	Enter 1. However, if supplies are typically included in the organization's overall land stewardship operating budget, rather than allocated to individual preserves, estimate the percent of time the supplies will be used on this property annually and enter that as the quantity. The calculator will then determine the annual cost of supplies allocated to this property.
	Unit cost:	Enter total amount to be spent on supplies annually. E.g. if $500 is budgeted annually for equipment such as chainsaws and brush cutters that are used 10 percent of the time on this property, enter 0.1 as the quantity and $500 as the Unit cost.
Other (add description)	*Task:*	These two rows may be copied and pasted as many times as needed. Type description of task in Task field after pasting.
	If staff will perform work:	Enter Materials and Labor costs (see detailed instructions under Habitat Management above).
	If contractors will perform work:	Enter Contract Amount and Staff Oversight costs (see detailed instructions under Habitat Management above).
Occupancy (applicable only to property owner)		
Property taxes	*Unit cost:*	Enter total amount of taxes, drainage assessments, other fees.
Insurance	*Unit cost:*	Enter total amount of property damage and liability insurance.
Other fees	*Unit cost:*	Enter fees such as utilities (gas, electricity, and water), water rights fees, etc.

CALCULATOR QUICK REFERENCE GUIDE
Summary Sheet

Site Protection Monitoring and Easement Stewardship	
Annual Cost Subtotal	Auto-fills subtotal from Tab 2.
Contingency	Calculates the Contingency using the rate entered on Tab 1.
Administrative	Calculates the Administrative Cost using the rate entered on Tab 1.
Annual Cost Total (includes Option B Legal Defense Costs):	Sum of the Annual Cost Subtotal, Contingency, and Administrative costs. Includes legal defense costs calculated using Option B, if applicable.
Capitalization Rate	Auto-fills rate entered on Tab 1.
Option A: Legal defense fund contribution	Auto-fills lump sum contribution entered on Tab 2 under Option A, if applicable.
Total Land & Easement Stewardship Fund Principal Needed:	Calculates the total fund principal needed.
Land Management and Maintenance	
Annual Cost Subtotal	Auto-fills subtotal from Tab 3.
Contingency	Calculates the Contingency using the rate entered on Tab 1.
Administrative	Calculates the Administrative Cost using the rate entered on Tab 1.
Annual Cost Total	Sum of the Annual Cost Subtotal, Contingency, and Administrative costs.
Capitalization Rate	Auto-fills rate entered on Tab 1.
Total Land Management & Maintenance Fund Principal Needed:	Calculates the total fund principal needed.
Overall Total Fund Principal Needed:	Adds the principal needed for Land & Easement Stewardship and Land Management & Maintenance to determine the overall total fund principal needed.

APPENDIX

B

EXAMPLES OF THE CALCULATOR IN USE

APPENDIX B: EXAMPLES OF THE CALCULATOR IN USE

The following fictitious examples are provided for demonstration purposes only, to illustrate how the calculator can be used for a variety of projects. Actual labor and material costs will vary for individual projects.

Example 1: Working forest easement

A land trust in the northeastern U.S. is acquiring a voluntary easement on a 600-acre property, which will be divided into a natural area and a working forest. The natural area captures the unique ecological features and scenic areas of the property. These include an exemplary natural community, rare plant species, and the watershed of a largely undeveloped pond. Timber harvesting will not be permitted in the natural area. The working forest is an area where the landowner plans to do sustainable timber harvesting. They also intend to use the working forest area for some small scale forest farming, which has been defined as "the cultivation of non-invasive crops, such as herbs, mushrooms, fruits and nuts, under the protection of a forest canopy that has been modified to provide the correct shade level."

The property is readily accessible from town roads, and access to the interior of the property is gained through a network of forest roads and hiking trails. The land generally consists of an east-west oriented ridge rising above the northern edge of a pond. The south-facing slopes above the pond will be part of the natural area, while the north-facing slopes are where the working forest will be found.

The property owners currently have three houses/camps on the property, which will be excluded from the easement. They are also retaining a right to build an off the grid cabin.

The property is owned by a large family trust with more than two dozen individuals involved. There can be differing points of view within the family about how the property should be managed, and the land trust is sometimes consulted when this is the case. As a result, the land trust anticipates having to spend more time on landowner relations at this property than they would at other similar sized easements. They do not believe there is a higher than average likelihood of easement violations, beyond de minimus, at this property. The family is conservation minded and they are donating the easement.

The land trust plans to conduct annual easement monitoring visits, reporting and communicating with the landowner. The costs associated with this were estimated on the Site Protection Monitoring and Easement Stewardship Costs tab. The land trust will review and update the forest management plan every ten years, to guide the timber management done by the landowner. This cost was estimated on the Land Management and Maintenance Costs tab. The land trust's policy is to set aside $5,000 for legal defense for each new easement.

Using the calculator, the estimated annual cost of long-term easement stewardship is a total of $1,240.19. Funds for long-term stewardship will be invested in an endowment with a diversified mix of stocks, bonds, and other asset classes. After accounting for inflation and fees, a 4.55% cap rate was used to calculate the total fund principal of $39,480.

1 – ASSUMPTIONS TAB

LONG-TERM STEWARDSHIP COSTS CALCULATOR

NOTE: Enter values in blue-shaded cells.
Click on individual Tasks and Descriptions for additional guidance.

Project Name:	Acres:	State (or state equivalent):	Country:	Prepared by:	Date:
Working Forest Easement	600	Northeast	US	Director of Stewardship	03/28/16

Unit Cost Estimates:			
	Quantity	Units	Cost
Regular staff hourly rate (inc benefits)		hour	$ 40.00
Short-term staff hourly rate (inc benefits)		hour	$ 20.00
Travel Costs:			
Mileage OR cost (round-trip)	180	miles	$ -
Mileage rate	0.54	$/mile	
Vehicle Travel Cost:			$ 97.20
Overnight lodging cost (per night)	$ 85.00	$/night	
Per diem (meals)	$ 20.00	$/day	

Additional Rates:	
Capitalization rate	4.55%
% of annual costs covered by fund (50% or 100%)	100%
Contingency (10-20%)	15%
Administrative (recommended min 10%)	10%

2 – STEWARDSHIP TAB

Site Protection Monitoring and Easement Stewardship Costs

NOTE: Enter values in blue-shaded cells. Click on individual Tasks and Descriptions for additional guidance.

Stewardship Tasks	Description	Regular Staff (hours)	Short-term Staff (hours)	Quantity	Unit	Unit Cost	Extended Cost
Monitoring the site protection mechanism							
Preparation for site visit	Staff time	1	3		hours		$ 100.00
Travel expenses occurring annually	Number of trips annually			2	# trips		
	Overnight stays for annual site visit(s)			0	# nights	$ 234.40	$ 234.40
	Allowance for meals (# of days) for annual site visit(s)			2	# days		
Travel expenses (non-annual trips)	Number of trips			1	# trips		
	Overnight stays for site visit(s)			0	# nights	$ 117.20	$ 117.20
	Allowance for meals (# of days) for site visit(s)			1	# days		
Site visit	Visual assessment, notes, photos. Include travel time and time on-site.		16		hours		$ 320.00
Site visit	Visual assessment, notes, photos. Include travel time and time on-site.	9			hours		$ 360.00
Prepare and submit report, maintain records	Report preparation & submittal, agency coordination, maintenance of records	1	3		hours		$ 100.00
	Expenses (e.g. printing, copying, mailing)				ea		$ -
Supplies	Misc. supplies including replacement costs for mobile devices and accessories, printing costs, CE signage (boundary tin squares, natural area), flagging, etc.			1	ea	$ 75.00	$ 75.00
Maintaining landowner/neighbor relationships							
Staff time	Communicating with landowner, reviewing reserved rights, etc.	4			hours		$ 160.00
Communications/outreach	Staff time				hours		$ -
	Expenses (e.g. newsletter/brochure printing, postage, supplies for events, etc.)				ea		$ -
Enforcement to correct violations							
Option A: Legal defense fund contribution	Lump sum (based on LTA Legal Defense Reserves calculator). Entire lump sum is carried over to Summary tab.			1	ea	$ 5,000.00	$ 5,000.00
Option B: Legal defense costs	Staff time				hours		$ -
	Travel expenses (Number of trips)				# trips		
	Travel expenses (Overnight stays for site visit(s))				# nights	$ -	$ -
	Travel expenses (Meals (# of days) for site visit(s))				# days		
	Legal fees				hours		$ -
Legal Defense Insurance	Annual insurance premium, prorated for an individual property				ea		$ -
						ANNUAL COST SUBTOTAL:	

2 – STEWARDSHIP TAB (CONTINUED)

Site Protection Monitoring and Easement Stewardship Costs

Stewardship Tasks	Recurrence Interval (years)	Annual Cost	Subtotal	Notes (explain assumptions used in cost estimate; indicate corresponding LTMP task)	Responsible Party
Monitoring the site protection mechanism			$ 988.47		land trust
Preparation for site visit	1	$ 100.00			
Travel expenses occurring annually	1	$ 234.40			
Travel expenses (non-annual trips)	3	$ 39.07			
Site visit	1	$ 320.00		annual monitoring will be done by short-term staff	
Site visit	3	$ 120.00		regular staff will visit the CE at least once/3 yrs	
Prepare and submit report, maintain records	1	$ 100.00			
	1	$ -			
Supplies	1	$ 75.00			
Maintaining landowner/neighbor relationships			$ 160.00		
Staff time	1	$ 160.00			
Communications/outreach	1	$ -			
	1	$ -			
Enforcement to correct violations			$ -		
Option A: Legal defense fund contribution	N/A	N/A			
Option B: Legal defense costs	8	$ -			
	8	$ -			
	8	$ -			
Legal Defense Insurance	1	$ -			
		ANNUAL COST SUBTOTAL:	**$ 1,148.47**		

3 – LAND MANAGEMENT AND MAINTENANCE

Land Management and Maintenance Costs

NOTE: Enter values in blue-shaded cells. Click on individual Tasks and Descriptions for additional guidance.

Management and Maintenance Tasks	Description	Regular Staff (hours)	Short-term Staff (hours)	Quantity	Unit	Unit Cost	Extended Cost
Infrastructure Maintenance and Replacement							
Travel expenses recurring annually	Number of trips annually				# trips		
	Overnight stays for annual site visit(s)				# nights	$ -	$ -
	Allowance for meals (# of days) for annual site visit(s)				# days		
Travel expenses (non-annual trips)	Number of trips				# trips		
	Overnight stays for site visit(s)				# nights	$ -	$ -
	Allowance for meals (# of days) for site visit(s)				# days		
Site visit	Inspect boundaries, signs, other infrastructure. Include prep time, travel time and time on-site.				hours		$ -
Remove trash and rectify trespass, vandalism	Trash removal and addressing trespass, vandalism				hours		$ -
Replace fence	Materials or Contract Amount				linear ft	$ -	$ -
	Labor or Staff Oversight				hours		$ -
Replace signs	Material (add description)				ea	$ -	$ -
	Labor (may be included in annual site visit)				hours		$ -
Other (select from drop-down)	Materials or Contract Amount				ea	$ -	$ -
	Labor or Staff Oversight				hours		$ -
Equipment daily use rate	Vehicle (add description)				day	$ -	$ -
	Other (select from drop-down list)				day	$ -	$ -
Equipment replacement	Vehicle (add description)				ea	$ -	$ -
	Other (select from drop-down list)				ea	$ -	$ -
Ecological Management							
Travel expenses	Number of trips annually				# trips		
	Overnight stays for annual site visit(s)				# nights	$ -	$ -
	Allowance for meals (# of days) for annual site visit(s)				# days		
Travel expenses (non-annual trips)	Number of trips			1	# trips		
	Overnight stays for site visit(s)			0	# nights	$ 117.20	$ 117.20
	Allowance for meals (# of days) for site visit(s)			1	# days		
Update management plan	Review, update forest management plan	20			hours		$ 800.00
Ecological monitoring	Monitoring T&E species, inventories, reporting				hours		$ -
	Supplies				ea	$ -	$ -
Invasive species control (plants)	Materials or Contract Amount				ea	$ -	$ -
	Labor or Staff Oversight				hours		$ -
Nuisance wildlife control	Materials or Contract Amount				ea	$ -	$ -
	Labor or Staff Oversight				hours		$ -
Prescribed fire	Cost of burn (burn plan, implementation of burn, follow-up monitoring)				ea	$ -	$ -
	Staff oversight of contract				hours		$ -
	Annual training and recertification costs				ea	$ -	$ -
Habitat management (select from drop-down)	Materials or Contract Amount				ea	$ -	$ -
	Labor or Staff Oversight				hours		$ -
Supplies	Small equipment & supplies				ea	$ -	$ -
Other (add description)	Materials or Contract Amount				ea	$ -	$ -
	Labor or Staff Oversight				hours		$ -
Occupancy							
Property taxes	Taxes, drainage assessments, other fees			1	ea	$ -	$ -
Insurance				1	ea	$ -	$ -
Other fees	eg. utilities, water rights			1	ea	$ -	$ -
							ANNUAL COST SUBTOTAL:

3 – LAND MANAGEMENT AND MAINTENANCE (CONTINUED)

Land Management and Maintenance Costs

Management and Maintenance Tasks	Recurrence Interval (years)	Annual Cost	Subtotal	Notes (explain assumptions used in cost estimate; indicate corresponding LTMP task)	Responsible Party
Infrastructure Maintenance and Replacement			$ -		
Travel expenses recurring annually	1	$ -			
Travel expenses (non-annual trips)	3	$ -			
Site visit	1	$ -			
Remove trash and rectify trespass, vandalism	1	$ -			
Replace fence	1	$ -			
		$ -			
Replace signs	1	$ -			
		$ -			
Other (select from drop-down)	1	$ -			
		$ -			
Equipment daily use rate	1	$ -			
	1	$ -			
Equipment replacement	1	$ -			
	1	$ -			
Ecological Management			$ 91.72		land trust
Travel expenses	1	$ -			
Travel expenses (non-annual trips)	10	$ 11.72			
Update management plan	10	$ 80.00			
Ecological monitoring	1	$ -			
	1	$ -			
Invasive species control (plants)	1	$ -			
		$ -			
Nuisance wildlife control	1	$ -			
		$ -			
Prescribed fire	1	$ -			
		$ -			
	1	$ -			
Habitat management (select from drop-down)	1	$ -			
		$ -			
Supplies	1	$ -			
Other (add description)	1	$ -			
		$ -			
Occupancy			$ -		
Property taxes	1	$ -			
Insurance	1	$ -			
Other fees	1	$ -			
		ANNUAL COST SUBTOTAL:	**$ 91.72**		

4 – SUMMARY TAB

SUMMARY OF LONG-TERM COSTS AND PRINCIPAL NEEDED

Project Name:	Acres:	State (or state equivalent):	Country:	Prepared by:	Date:
Working Forest Easement	**600**	**Northeast**	**US**	**Director of Stewardship**	**3/28/16**

Site Protection Monitoring and Easement Stewardship

Annual Cost Subtotal (see Tab 2 for details)		$	1,148.47
Contingency (10-20%)	15%	$	172.27
Administrative (min 10%)	10%	$	132.07
Annual Cost Total (includes Option B Legal Defense Costs):		$	1,452.81
Capitalization Rate:	4.55%		
Option A: Legal defense fund contribution		$	5,000.00
Total Fund Principal Needed for Site Protection Monitoring and Easement Stewardship:		**$**	**36,929.90**

Land Management and Maintenance

Annual Cost Subtotal (see Tab 3 for details)		$	91.72
Contingency (10-20%)	15%	$	13.76
Administrative (min 10%)	10%	$	10.55
Annual Cost Total:		$	116.03
Capitalization Rate:	4.55%		
Total Fund Principal Needed for Land Management and Maintenance:		**$**	**2,550.02**
Overall Total Fund Principal Needed:		**$**	**39,479.92**

Example 2: Stream and Riparian Buffer restoration

This compensatory mitigation project involves preservation of approximately 7,000 feet of stream and river frontage and 80 acres of riparian buffer. Initial restoration will involve reforesting a 9-acre hayfield in the riparian buffer, through invasive species management and tree planting. Long-term management activities will include invasive species control, trash removal, and fence, gate and culvert maintenance and repair. The site will be visited on an annual basis to conduct a site inspection and complete needed management activities.

This site is being protected and restored through an in-lieu fee program, which sets aside 20% of the initial restoration costs in a corrective action fund to cover any maintenance needed to ensure the site meets the performance standards during the ten-year monitoring period. Once the site reaches the end of the monitoring period, any remaining corrective action funds will be returned to the general balance of the ILF fund for implementation of future projects. An additional 10% contingency was added to account for unexpected cost increases and estimation errors and an administrative rate of 10% was added to cover overhead costs.

Using the calculator, the total annual cost of long-term site protection monitoring and stewardship is estimated at $1,231.49 and long-term management and maintenance is estimated at $2,540.38, including contingency and administration. Funds for long-term stewardship will be invested in an endowment with a diversified mix of stocks, bonds, and other asset classes. After accounting for inflation and fees, a 4.55% cap rate was used to calculate the total fund principal of $82,898.

1 – ASSUMPTIONS TAB

LONG-TERM STEWARDSHIP COSTS CALCULATOR

NOTE: Enter values in blue-shaded cells.
Click on individual Tasks and Descriptions for additional guidance.

Project Name:	Acres:	State (or state equivalent):	Country:	Prepared by:	Date:
Stream and Riparian Buffer ILF Restoration	80	N/A	US	ILF Manager	03/28/16

Unit Cost Estimates:			
	Quantity	Units	Cost
Regular staff hourly rate (inc benefits)		hour	$ 30.00
Short-term staff hourly rate (inc benefits)		hour	$ -
Click + to the left to expand additional hourly rates (see Instructions below).			
Travel Costs:			
Mileage OR cost (round-trip)	394	miles	$ -
Mileage rate	0.54	$/mile	
Vehicle Travel Cost:			$ 212.76
Overnight lodging cost (per night)	$ -	$/night	
Per diem (meals)	$ 25.00	$/day	

Additional Rates:	
Capitalization rate	4.55%
% of annual costs covered by fund (50% or 100%)	100%
Contingency (10-20%)	10%
Administrative (recommended min 10%)	10%

2 – STEWARDSHIP TAB

Site Protection Monitoring and Easement Stewardship Costs

NOTE: Enter values in blue-shaded cells. Click on individual Tasks and Descriptions for additional guidance.

Stewardship Tasks	Description	Regular Staff (hours)	Short-term Staff (hours)	Quantity	Unit	Unit Cost	Extended Cost
Monitoring the site protection mechanism							
Preparation for site visit	Staff time	2			hours		$ 60.00
Travel expenses occurring annually	Number of trips annually			1	# trips	$ 237.76	$ 237.76
	Overnight stays for annual site visit(s)			0	# nights		
	Allowance for meals (# of days) for annual site visit(s)			1	# days		
Travel expenses (non-annual trips)	Number of trips				# trips	$ -	$ -
	Overnight stays for site visit(s)				# nights		
	Allowance for meals (# of days) for site visit(s)				# days		
Site visit	Visual assessment, notes, photos. Include travel time and time on-site.	12			hours		$ 360.00
Prepare and submit report, maintain records	Report preparation & submittal, agency coordination, maintenance of records	4			hours		$ 120.00
	Expenses (e.g. printing, copying, mailing)				ea		$ -
Supplies	Add description (e.g. iPad/tablet, camera, GPS, aerial or satellite imagery, UAV (drone))				ea		$ -
Maintaining landowner/neighbor relationships							
Staff time	Communicating with landowner/neighbors, reviewing reserved rights, etc.	8			hours		$ 240.00
Communications/outreach	Staff time				hours		$ -
	Expenses (e.g. newsletter/brochure printing, postage, supplies for events, etc.)				ea		$ -
Enforcement to correct violations							
Option A: Legal defense fund contribution	Lump sum (based on LTA Legal Defense Reserves calculator). Entire lump sum is carried over to Summary tab.			1	ea		$ -
Option B: Legal defense costs	Staff time				hours		$ -
	Travel expenses (Number of trips)				# trips	$ -	$ -
	Travel expenses (Overnight stays for site visit(s))				# nights		
	Travel expenses (Meals (# of days) for site visit(s))				# days		
	Legal fees				hours		$ -
Legal Defense Insurance	Annual insurance premium, prorated for an individual property				ea		$ -
						ANNUAL COST SUBTOTAL:	

2 – STEWARDSHIP TAB (CONTINUED)

Site Protection Monitoring and Easement Stewardship Costs

Stewardship Tasks	Recurrence Interval (years)	Annual Cost	Subtotal	Notes (explain assumptions used in cost estimate; indicate corresponding LTMP task)	Responsible Party
Monitoring the site protection mechanism			$ 777.76		ILF program
Preparation for site visit	1	$ 60.00			
Travel expenses occurring annually	1	$ 237.76			
Travel expenses (non-annual trips)	3	$ -			
Site visit	1	$ 360.00		8 hrs travel time, 4 hrs field time	
Prepare and submit report, maintain records	1	$ 120.00			
	1	$ -			
Supplies	1	$ -			
Maintaining landowner/neighbor relationships			$ 240.00		
Staff time	1	$ 240.00			
Communications/outreach	1	$ -			
	1	$ -			
Enforcement to correct violations			$ -		
Option A: Legal defense fund contribution	N/A	N/A			
Option B: Legal defense costs	8	$ -			
	8	$ -			
	8	$ -			
Legal Defense Insurance	1	$ -			
		ANNUAL COST SUBTOTAL:	**$ 1,017.76**		

3 – LAND MANAGEMENT AND MAINTENANCE

Land Management and Maintenance Costs

NOTE: Enter values in blue-shaded cells. Click on individual Tasks and Descriptions for additional guidance.

Management and Maintenance Tasks	Description	Regular Staff (hours)	Short-term Staff (hours)	Quantity	Unit	Unit Cost	Extended Cost
Infrastructure Maintenance and Replacement							
Travel expenses recurring annually	Number of trips annually			1	# trips		
	Overnight stays for annual site visit(s)			0	# nights	$ 237.76	$ 237.76
	Allowance for meals (# of days) for annual site visit(s)			1	# days		
Travel expenses (non-annual trips)	Number of trips			0	# trips		
	Overnight stays for site visit(s)			0	# nights	$ -	$ -
	Allowance for meals (# of days) for site visit(s)			0	# days		
Site visit	Inspect boundaries, signs, other infrastructure. Include prep time, travel time and time on-site.				hours		$ -
Remove trash and rectify trespass, vandalism	Trash removal and addressing trespass, vandalism	2	0		hours		$ 60.00
Maintain fence	Contract Amount			1700	linear ft	$ 0.04	$ 68.00
	Staff Oversight	2	0		hours		$ 60.00
Replace fence	Contract Amount			1700	linear ft	$ 2.78	$ 4,726.00
	Staff Oversight	5	0		hours		$ 150.00
Repair/replace signs	Material (12" No Trespassing)			2	ea	$ 2.50	$ 5.00
	Labor	1	0		hours		$ 30.00
Maintain gate	Contract Amount			3	ea	$ 4.00	$ 12.00
	Staff Oversight	0	0		hours		$ -
Replace gate	Contract Amount (2" tube gate, 12')			3	ea	$ 200.00	$ 600.00
	Staff Oversight	0	0		hours		$ -
Maintain culvert	Materials				ea	$ -	$ -
	Labor (clean out culvert)	1	0		hours		$ 30.00
Replace culvert	Contract Amount			2	ea	$ 4,000.00	$ 8,000.00
	Staff Oversight	3	0		hours		$ 90.00
Equipment daily use rate	Vehicle (add description)				day	$ -	$ -
	Other (select from drop-down list)				day	$ -	$ -
Equipment replacement	Vehicle (add description)				ea	$ -	$ -
	Other (select from drop-down list)				ea	$ -	$ -
Ecological Management							
Travel expenses	Number of trips annually			1	# trips		
	Overnight stays for annual site visit(s)			0	# nights	$ 237.76	$ 237.76
	Allowance for meals (# of days) for annual site visit(s)			1	# days		
Update management plan	Review and update management plan	7	0		hours		$ 210.00
Invasive species control (plants)	Contract Amount			1	ea	$ 430.00	$ 430.00
	Staff Oversight	12.5	0		hours		$ 375.00
Supplies	Small equipment & supplies				ea	$ -	$ -
Other (add description)	Materials or Contract Amount				ea	$ -	$ -
	Labor or Staff Oversight				hours		$ -
Occupancy							
Property taxes	Taxes, drainage assessments, other fees			1	ea	$ -	$ -
Insurance				1	ea	$ -	$ -
Other fees	eg. utilities, water rights			1	ea	$ -	$ -
						ANNUAL COST SUBTOTAL:	

3 – LAND MANAGEMENT AND MAINTENANCE (CONTINUED)

Land Management and Maintenance Costs

Management and Maintenance Tasks	Recurrence Interval (years)	Annual Cost	Subtotal	Notes (explain assumptions used in cost estimate; indicate corresponding LTMP task)	Responsible Party
Infrastructure Maintenance and Replacement			$ 1,014.73		ILF program
Travel expenses recurring annually	1	$ 237.76			
Travel expenses (non-annual trips)	3	$ -			
Site visit	1	$ -			
Remove trash and rectify trespass, vandalism	1	$ 60.00			
Maintain fence	1	$ 68.00		1.3% annual maintenance	
		$ 60.00		1hr contracting, 1hr field conf (in annual visit)	
Replace fence	20	$ 236.30			
		$ 7.50		3hr contracting, 2hr field conf (in annual visit)	
Repair/replace signs	10	$ 0.50			
		$ 3.00			
Maintain gate	1	$ 12.00		2% annual maintenance	
		$ -		oversight included in fence maintenance	
Replace gate	20	$ 30.00			
		$ -		oversight included in fence replacement	
Maintain culvert	1	$ -			
		$ 30.00			
Replace culvert	30	$ 266.67			
		$ 3.00		2hr contracting, 1hr field conf (in annual visit)	
Equipment daily use rate	1	$ -			
	1	$ -			
Equipment replacement	1	$ -			
	1	$ -			
Ecological Management			$ 1,084.76		
Travel expenses	1	$ 237.76			
Update management plan	5	$ 42.00		travel included in annual visit	
Invasive species control (plants)	1	$ 430.00		8.6 acres at $50/acre	
		$ 375.00		8.5hr travel, 2hr field conf, 2hr contracting	
Supplies	1	$ -			
Other (add description)	1	$ -			
		$ -			
Occupancy			$ -		
Property taxes	1	$ -		tax exempt	
Insurance	1	$ -			
Other fees	1	$ -			
		ANNUAL COST SUBTOTAL:	**$ 2,099.49**		

4 – SUMMARY TAB

SUMMARY OF LONG-TERM COSTS AND PRINCIPAL NEEDED

Project Name:	Acres:	State (or state equivalent):	Country:	Prepared by:	Date:
Stream and Riparian Buffer ILF Restoration	**80**	**N/A**	**US**	**ILF Manager**	**3/28/16**

Site Protection Monitoring and Easement Stewardship

Annual Cost Subtotal (see Tab 2 for details)		$	1,017.76
Contingency (10-20%)	10%	$	101.78
Administrative (min 10%)	10%	$	111.95
Annual Cost Total (includes Option B Legal Defense Costs)**:**		$	1,231.49
Capitalization Rate:	4.55%		
Option A: Legal defense fund contribution		$	-
Total Fund Principal Needed for Site Protection Monitoring and Easement Stewardship:		**$**	**27,065.71**

Land Management and Maintenance

Annual Cost Subtotal (see Tab 3 for details)		$	2,099.49
Contingency (10-20%)	10%	$	209.95
Administrative (min 10%)	10%	$	230.94
Annual Cost Total:		$	2,540.38
Capitalization Rate:	4.55%		
Total Fund Principal Needed for Land Management and Maintenance:		**$**	**55,832.50**
Overall Total Fund Principal Needed:		**$**	**82,898.21**

Returning prescribed fire to longleaf pine forest rejuvenates a lush understory of native grasses and forbs, saw palmetto and other shrubs. © Carlton Ward Jr.

Example 3: Mitigation Bank with prescribed fire

This wetland mitigation bank is a 500-acre property in the southeastern U.S. comprised primarily of long-leaf pine savanna. The property is a former cattle ranch that had been logged and drained by ditches. Restoration focused on the pine flatwoods ecosystem, with scattered cypress domes, floodplain swamps, wet prairies, and uplands such as pine forests, scrubby pine and dry prairies. Ditches were plugged to restore hydrology, invasive species were removed, long-leaf pine trees were planted and controlled burns were returned to this fire-dependent landscape.

A long-term management plan was developed as part of the mitigation banking instrument, which identified the activities needed for long-term management and the parties responsible for conducting them. A local land trust will hold the conservation easement, conducting annual monitoring of the easement and reporting to regulatory agencies. As the property will be open to the public, extra time may be needed for site visits to address any issues related to public use.

An ecological services company will hold the contract for the management and maintenance of the property. Infrastructure maintenance will be necessary on two miles of roads with several low water crossings and culverts.

Long-term ecological management will include control of invasive species such as cogon grass and woody vegetation in the understory. Prescribed fire is essential,

so one-third of the property will be burned every year, with the entire property burned every three years. Vegetation monitoring will be done every five years, with reporting to regulatory agencies. The long-term management plan will be reviewed and updated every five years.

A contingency rate of 20% and an administrative rate of 15% were added to the annual cost subtotals for easement monitoring and ecological management. Funds for long-term stewardship will be invested in an endowment with a diversified mix of stocks, bonds, and other asset classes. After accounting for inflation and fees, a 3.5% cap rate was used to calculate the total fund principal.

Using the calculator, the total annual cost of long-term easement stewardship is estimated at $2,819.43, including contingency and administration. Using a cap rate of 3.5% and a contribution of $6,000 for legal defense, the total fund principal needed for easement stewardship is $86,555.

The total annual cost of long-term land management and maintenance is estimated at $28,535.81, including contingency and administration. Using a cap rate of 3.5%, the total fund principal needed for land management and maintenance is $815,309. The overall total endowment will be $901,864.

Restored long-leaf pine forest. © Carlton Ward Jr.

1 – ASSUMPTIONS TAB

LONG-TERM STEWARDSHIP COSTS CALCULATOR

NOTE: Enter values in blue-shaded cells.
Click on individual Tasks and Descriptions for additional guidance.

Project Name:	Acres:	State (or state equivalent):	Country:	Prepared by:	Date:
Long-leaf pine savanna mitigation bank	500	Southeast	US	Mitigation provider	03/28/16

Unit Cost Estimates:			
	Quantity	**Units**	**Cost**
Regular staff hourly rate (inc benefits)		hour	$ 44.00
Short-term staff hourly rate (inc benefits)		hour	$ 24.00
Land Manager		hour	$ 120.00
Technician		hour	$ 90.00
Field crew		hour	$ 35.00
Enter staff type and hourly rate (inc benefits)		hour	$ -
Click + to the left to expand additional hourly rates (see Instructions below).			
Travel Costs:			
Mileage OR cost (round-trip)	80	miles	$ -
Mileage rate	0.54	$/mile	
Vehicle Travel Cost:			$ 43.20
Overnight lodging cost (per night)	$ -	$/night	
Per diem (meals)	$ 35.00	$/day	

Additional Rates:	
Capitalization rate	3.50%
% of annual costs covered by fund (50% or 100%)	100%
Contingency (10-20%)	20%
Administrative (recommended min 10%)	15%

2 – STEWARDSHIP TAB

Site Protection Monitoring and Easement Stewardship Costs

NOTE: Enter values in blue-shaded cells. Click on individual Tasks and Descriptions for additional guidance.

Stewardship Tasks	Description	Regular Staff (hours)	Short-term Staff (hours)	Quantity	Unit	Unit Cost	Extended Cost
Monitoring the site protection mechanism							
Preparation for site visit	Staff time	4			hours		$ 176.00
Travel expenses occurring annually	Number of trips annually			2	# trips		
	Overnight stays for annual site visit(s)			0	# nights	$ 226.40	$ 226.40
	Allowance for meals (# of days) for annual site visit(s)			4	# days		
Travel expenses (non-annual trips)	Number of trips				# trips		
	Overnight stays for site visit(s)				# nights	$ -	$ -
	Allowance for meals (# of days) for site visit(s)				# days		
Site visit	Visual assessment, notes, photos. Include travel time and time on-site.	8	8		hours		$ 544.00
Prepare and submit report, maintain records	Report preparation & submittal, agency coordination, maintenance of records	8			hours		$ 352.00
	Expenses (e.g. printing, copying, mailing)				ea		$ -
Supplies	iPad			0.1	ea	$ 500.00	$ 50.00
Maintaining landowner/neighbor relationships							
Staff time	Communicating with landowner/neighbors, reviewing reserved rights, etc.	4			hours		$ 176.00
Communications/outreach	Staff time	8			hours		$ 352.00
	Expenses (e.g. newsletter/brochure printing, postage, supplies for events, etc.)			1	ea	$ 200.00	$ 200.00
Enforcement to correct violations							
Option A: Legal defense fund contribution	Lump sum (based on LTA Legal Defense Reserves calculator). Entire lump sum is carried over to Summary tab.			1	ea	$ 6,000.00	$ 6,000.00
Option B: Legal defense costs	Staff time				hours		$ -
	Travel expenses (Number of trips)				# trips		
	Travel expenses (Overnight stays for site visit(s))				# nights	$ -	$ -
	Travel expenses (Meals (# of days) for site visit(s))				# days		
	Legal fees				hours		$ -
Legal Defense Insurance	Annual insurance premium, prorated for an individual property				ea		$ -
						ANNUAL COST SUBTOTAL:	

2 – STEWARDSHIP TAB

Site Protection Monitoring and Easement Stewardship Costs

Stewardship Tasks	Recurrence Interval (years)	Annual Cost	Subtotal	Notes (explain assumptions used in cost estimate; indicate corresponding LTMP task)	Responsible Party
Monitoring the site protection mechanism			$ 1,315.07		Land trust
Preparation for site visit	1	$ 176.00			
Travel expenses occurring annually	1	$ 226.40			
				2 trips, 2 people	
Travel expenses (non-annual trips)	3	$ -			
Site visit	1	$ 544.00		2 hrs travel time, 6 hrs field time	
Prepare and submit report, maintain records	1	$ 352.00			
	1	$ -			
Supplies	3	$ 16.67		Used 10% of time on this site	
Maintaining landowner/neighbor relationships			$ 728.00		
Staff time	1	$ 176.00			
Communications/outreach	1	$ 352.00			
	1	$ 200.00			
Enforcement to correct violations			$ -		
Option A: Legal defense fund contribution	N/A	N/A		per land trust policy	
Option B: Legal defense costs	8	$ -			
	8	$ -			
	8	$ -			
Legal Defense Insurance	1	$ -			
		ANNUAL COST SUBTOTAL:	**$ 2,043.07**		

3 – LAND MANAGEMENT AND MAINTENANCE

Land Management and Maintenance Costs

NOTE: Enter values in blue-shaded cells. Click on individual Tasks and Descriptions for additional guidance.

Management and Maintenance Tasks	Description	Land Manager (hours)	Technician (hours)	Field crew (hours)	Enter staff type and hourly rate (inc benefits) (hours)	Quantity	Unit	Unit Cost	Extended Cost
Infrastructure Maintenance and Replacement									
Travel expenses recurring annually	Number of trips annually					1	# trips	$ 148.20	$ 148.20
	Overnight stays for annual site visit(s)					0	# nights		
	Allowance for meals (# of days) for annual site visit(s)					3	# days		
Site visit	Inspect boundaries, signs, other infrastructure. Include prep time, travel time and time on-site.	8	8				hours		$ 1,680.00
Remove trash and rectify trespass, vandalism	Trash removal and addressing trespass, vandalism			8			hours		$ 280.00
Replace signs	Material (boundary signs)					40	ea	$ 2.00	$ 80.00
	Labor (included in annual site visit)						hours		$ -
Maintain roads	Contract Amount (cost per mile)					2	ea	$ 500.00	$ 1,000.00
	Staff Oversight		4				hours		$ 360.00
Maintain low water crossings/culverts	Contract Amount					10	ea	$ 375.00	$ 3,750.00
	Staff Oversight		4				hours		$ 360.00
Equipment daily use rate	UTV					1	day	$ 24.00	$ 24.00
	Other (select from drop-down list)						day	$ -	$ -
Equipment replacement	UTV					0.1	ea	$ 12,000.00	$ 1,200.00
	Other (select from drop-down list)						ea	$ -	$ -
Ecological Management									
Travel expenses	Number of trips annually					5	# trips	$ 741.00	$ 741.00
	Overnight stays for annual site visit(s)					0	# nights		
	Allowance for meals (# of days) for annual site visit(s)					15	# days		
Travel expenses (non-annual trips)	Number of trips					3	# trips	$ 339.60	$ 339.60
	Overnight stays for site visit(s)					0	# nights		
	Allowance for meals (# of days) for site visit(s)					6	# days		
Update management plan	Review and update management plan	8					hours		$ 960.00
Ecological monitoring	Monitoring T&E species, inventories, reporting	24	24				hours		$ 5,040.00
	Supplies					1	ea	$ 50.00	$ 50.00
Invasive species control (plants)	Materials (herbicide)					10	ea	$ 30.00	$ 300.00
	Labor		40	80			hours		$ 6,400.00
Prescribed fire	Cost of burn (burn plan, implementation of burn, follow-up monitoring)					1	ea	$ 6,000.00	$ 6,000.00
	Staff oversight of contract						hours		$ -
	Annual training and recertification costs					1	ea	$ 500.00	$ 500.00
Supplies	Small equipment & supplies					1	ea	$ 200.00	$ 200.00
Occupancy									
Property taxes	Taxes, drainage assessments, other fees					1	ea	$ 1,000.00	$ 1,000.00
Insurance						1	ea	$ 100.00	$ 100.00
Other fees	eg. utilities, water rights					1	ea	$ -	$ -
								ANNUAL COST SUBTOTAL:	

3 – LAND MANAGEMENT AND MAINTENANCE

Land Management and Maintenance Costs

Management and Maintenance Tasks	Recurrence Interval (years)	Annual Cost	Subtotal	Notes (explain assumptions used in cost estimate; indicate corresponding LTMP task)	Responsible Party
Infrastructure Maintenance and Replacement			$ 4,159.20		Land manager
Travel expenses recurring annually	1	$ 148.20		Task 1A	
Site visit	1	$ 1,680.00		Task 1A	
Remove trash and rectify trespass, vandalism	1	$ 280.00		Task 1B	
Replace signs	5	$ 16.00		Task 1C	
		$ -			
Maintain roads	1	$ 1,000.00		Task 1D	
		$ 360.00			
Maintain low water crossings/culverts	10	$ 375.00		Task 1D	
		$ 36.00			
Equipment daily use rate	1	$ 24.00			
	1	$ -			
Equipment replacement	5	$ 240.00		Used 10% of time on this site	
	1	$ -			
Ecological Management			$ 15,418.92		
Travel expenses	1	$ 741.00		Task 2A	
Travel expenses (non-annual trips)	5	$ 67.92		Task 2C	
Update management plan	5	$ 192.00		Task 2D	
Ecological monitoring	5	$ 1,008.00		Task 2C	
		$ 10.00			
Invasive species control (plants)	1	$ 300.00		Task 2A	
		$ 6,400.00		treat 25% of site annually	
Prescribed fire	1	$ 6,000.00		Task 2B	
		$ -			
	1	$ 500.00			
Supplies	1	$ 200.00			
Occupancy			$ 1,100.00		
Property taxes	1	$ 1,000.00			
Insurance	1	$ 100.00			
Other fees	1	$ -			
		ANNUAL COST SUBTOTAL:	**$ 20,678.12**		

4 – SUMMARY TAB

SUMMARY OF LONG-TERM COSTS AND PRINCIPAL NEEDED

Project Name:	Acres:	State (or state equivalent):	Country:	Prepared by:	Date:
Long-leaf pine savanna mitigation bank	**500**	**Southeast**	**US**	**Mitigation provider**	**3/28/16**

Site Protection Monitoring and Easement Stewardship

Annual Cost Subtotal (see Tab 2 for details)		$	2,043.07
Contingency (10-20%)	20%	$	408.61
Administrative (min 10%)	15%	$	367.75
Annual Cost Total (includes Option B Legal Defense Costs)**:**		$	2,819.43
Capitalization Rate:	3.50%		
Option A: Legal defense fund contribution		$	6,000.00
Total Fund Principal Needed for Site Protection Monitoring and Easement Stewardship:		**$**	**86,555.20**

Land Management and Maintenance

Annual Cost Subtotal (see Tab 3 for details)		$	20,678.12
Contingency (10-20%)	20%	$	4,135.62
Administrative (min 10%)	15%	$	3,722.06
Annual Cost Total:		$	28,535.81
Capitalization Rate:	3.50%		
Total Fund Principal Needed for Land Management and Maintenance:		**$**	**815,308.73**
Overall Total Fund Principal Needed:		**$**	**901,863.93**

APPENDIX

C

EXAMPLE STEWARDSHIP STANDARDS AND GUIDELINES

APPENDIX C: EXAMPLE STEWARDSHIP STANDARDS AND GUIDELINES

Minimum Stewardship Standards & Guidelines for The Nature Conservancy's Northeastern U.S. Chapters[119]

December 1st, 2015[120,121]

These standards and guidelines are included as an example for partner organizations as they develop and implement conservation projects. Every project has its own local context that needs to be considered when evaluating what are the minimum stewardship standards and practices to employ.

These stewardship guidelines were developed by the Northeastern Stewardship Steering Committee and are based on recommendations from: Zankel, M. 2012. An Assessment of The Nature Conservancy's Stewardship Programs in the Northeastern United States. The Nature Conservancy. They have been developed by and for the Northeastern United States Operating Units (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York). These guidelines represent a set of minimum stewardship standards that the Northeastern States aspire to, and to which we will hold ourselves accountable. They include the fundamental and core work that is needed to responsibly steward the lands and waters where the Conservancy holds a legal interest. In meeting these standards and guidelines, the Conservancy will be well positioned to maintain public trust and strong connections to people and human communities, which will support our organizational priority to expand nature's constituency.

Must Do:

The following stewardship activities are proposed as *"must do"* because: a) they are essential to protecting the ecological features of the site; b) they are required by TNC policy/SOP, LTA Standards and Practices, or by law; c) there may be significant legal and financial risks if we don't do them; d) they are considered to be an essential element of being a responsible landowner; and/or e) they are deemed important for maintaining the organization's reputation.

1. **Legal Monitoring:** Monitor and enforce TNC-held conservation easements and deed restrictions consistent with SOPs.
2. **Management Planning:** Develop, update, and implement management plans for fee-owned lands (fire, grazing, forest, restoration or similar plans are acceptable if they contain the required components of the SOP) and review/update every five years. Complete Compatible Human Use Analysis for activities requiring approval.
3. **Integrity of Ownership:** Monitor and defend fee-owned lands
   - At a minimum, inspect fee lands by routine visitation/monitoring once annually, as required by the Fee Land Management and Inspections

[119]

[120] This document was updated on December 1st, 2015 to reflect the change in the Fee Land Management and Inspection SOP to require annual monitoring. Previously, the SOP called for monitoring fee parcels once every 36 months.

[121] Available to Conservancy staff, with links to internal SOPs, at https://connect.tnc.org/sites/NortheastStewardshipAssessment.

SOP. Fee parcels with structures, heavy visitation, or other special management needs will require more frequent monitoring.

- Monitor and maintain boundaries. Monitor each line at least once every 5 years through remote sensing and/or field visitation and inspect more often if there is a high risk of trespass. Ensure lines are clearly marked in accordance with local requirements and standard boundary norms, especially for high-risk property boundaries.
- Document and respond to unauthorized use.

4. **Public Access:** Where TNC-maintained public access infrastructure exists, maintain safe facilities and a high quality visitor experience that is compatible with the overarching conservation goals for the land.
    - Maintain a welcoming, attractive visual image for the public — it should look like someone is taking care of the land!
    - Keep TNC-sanctioned trails safe, passable, ecologically sustainable, and clearly marked, and provide maps (paper or digital) to clearly indicate what the "official" trails are on the preserve; close unauthorized trails.
    - Conduct assessments and post signage related to DOJ-ADA compliance.
    - Maintain parking areas, signage, and kiosks in good condition.
    - Clearly post permitted and prohibited uses.
    - Control access to hazardous areas and attractive nuisances.
    - Maintain regular communication with formal/key user groups if a formal user agreement is in place.
    - Ensure property is clearly identified as a TNC preserve, with contact information for the chapter (or preserve manager, where applicable) available at the trailhead or similar location.
5. **Restrictions:** Comply with legal interests held by others on our lands, and promptly respond to any violations that are identified during routine monitoring. Document and comply with donor intent where applicable.
6. **Structures:** Maintain or remove structures (bridges, buildings, kiosks, boardwalks, etc) on our land that pose a hazard to visitors.
7. **Administration:**
    - Manage lease agreements (where applicable) and ensure that the terms of lease agreements are being met through regular field-based inspections or other means.
    - Ensure that municipal tax assessments (where applicable) are accurate and utilize available programs (e.g., current use) that accurately reflect the property's nature preserve status.
    - Maintain records of inspections of fee and easement properties, and other essential records and documents so as to be organized and accessible.
    - Provide timely responses to inquiries from researchers, neighbors, community officials, preserve visitors, and others.
8. **Ecological Management/Restoration:** For ecological and flagship preserves, ensure management and restoration necessary to maintain viability of conservation targets and resilient systems as identified in the preserve's management plan.
9. **Ecological Status Assessment:** For ecological and flagship preserves, maintain at least a qualitative understanding of the presence/status of conservation targets to determine if our investments are still performing.
10. **Be a Good Neighbor:** Maintain good neighbor and community relations, and be aware of and consider how our management may affect neighbors.

Should Do:

The following activities are highlighted as things that The Nature Conservancy *"should do"* given our conservation mission, and because of the representations and commitments we have made to donors and the public.

1. **Research:** Respond to research or ecological monitoring requests by others on our land and obtain copies of data/reports when research is completed to further our understanding of our properties.
2. **Control Federally listed noxious weeds:** Manage populations of invasive species that are directly threatening the ecological integrity of conservation targets at a site.
3. **Administration:**
    - Document stewardship activities and needs.
4. **Public Access:**
    - Maintain regular communication with formal/ key user groups
    - Establish at-least one ADA compliant trail
5. **Structures:**
    - Avoid deferred maintenance of buildings and other structures that may result in visual/ aesthetic impacts

Additionally there are many other activities that could fall under "could do". These are not listed herein, but are described further in the NE Stewardship assessment report under Observations and Conclusions.

TNC Staff and partners at the Butternut Island Photo Monitoring. © The Nature Conservancy (George C. Gress)

APPENDIX

D

EXAMPLE INVESTMENT POLICY STATEMENT

APPENDIX D: EXAMPLE INVESTMENT POLICY STATEMENT

California Department of Fish and Wildlife

Investment Policy Statement for Mitigation Endowment Accounts Held by the National Fish and Wildlife Foundation

Definitions

CDFW — The California Department of Fish and Wildlife, an agency of the State of California with jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of these species.

COMMITTEE — The IDEA Endowment Committee of the Foundation.

ENDOWMENT FUNDS — These consist of assets held by the Foundation within its Impact-Directed Environmental Accounts program and designated by the CDFW for long-term management with a growth and income focus. These are hereafter referred to as Endowment Funds or, collectively, the "Endowment."

FOUNDATION — The National Fish and Wildlife Foundation.

IPS — This investment policy statement for CDFW mitigation endowment accounts held by the Foundation.

MANAGER — The investment management organization(s) engaged as the Foundation's investment manager. As of August 2010, the Manager is Commonfund.

Monitoring station amidst cypress restoration, part of a wetland mitigation project in Dismal Swamp, North Carolina. © The Nature Conservancy (Erika Nortemann)

Broad Philosophy

This IPS governs the investment management of Endowment Funds that are generated as a component of required environmental mitigation as set forth in permits, licenses, authorizations, and/or other "decision documents" issued by, through, or otherwise subject to the jurisdiction of the CDFW. The legal and regulatory programs pursuant to which such Endowment Funds are generated include, but are not necessarily limited to, the California Endangered Species Act (Cal. Fish and Game Code Section 2050 *et seq.*), the California Lake and Streambed Alteration Program (Cal. Fish and Game Code Section 1600 *et seq.*), the California Natural Community Conservation Planning Act (Cal. Fish and Game Code Section 2800 *et seq.*), and the California Environmental Quality Act (Cal. Public Resources Code Section 21000 *et seq.*).

The CDFW has executed a Memorandum of Agreement ("MOA") with the Foundation regarding the Foundation's management of several categories of funds required by the CDFW to pay for environmental mitigation measures. One specific category of funds that may be required by the CDFW, and deposited into one or more accounts at the Foundation, is referred to as "long-term land management" or "endowment" funding. These funds are intended to provide a source of long-term, perhaps perpetual, yearly funding for the parcels of real property with which they are associated. It is the CDFW's expectation that such funds will be managed by the Foundation and invested by the Manager in a manner that enhances the likelihood that the initial principal amount of endowment funding for a particular parcel will provide sufficient investment growth and income to pay for required management and maintenance of that property over an indefinite period of time. Such funds will comprise the Endowment addressed by this IPS.

The Endowment Funds governed by this IPS will be maintained in financial accounts held at the Foundation, which will administer the Endowment in accordance with the terms hereof. Except to the extent provided otherwise in this IPS, in the MOA, or as otherwise specified by the CDFW in writing, the Foundation will manage the Endowment in accordance with the Uniform Prudent Management of Institutional Funds Act ("UPMIFA"), codified in California at Cal. Prob. Code §18501 et seq. This IPS will remain in effect until modified at the direction of the CDFW, acting in consultation with the Committee. The Committee will monitor the performance of the Endowment Funds and of the Manager and may make recommendations to the CDFW, from time to time as warranted, for potential changes in the objectives and policies set forth herein. Final responsibility for the provisions of this IPS and any changes hereto will at all times remain with the CDFW. The Manager is expected to propose to the Foundation any revisions to these objectives and policies at any time that the Manager deems appropriate or advisable, and the Foundation will thereafter convey such proposed revisions to the CDFW for its consideration.

The Foundation has delegated to the Manager the day-to-day management and investment of the Endowment Funds. Under the scope of this delegation, the Manager shall have discretion to manage the Endowment Funds in a manner that best achieves the investment objectives within the guidelines set forth in this IPS. In discharging its duties as investment manager, the Manager shall invest and manage the Endowment Funds in good faith and as a prudent investor would, exercising reasonable care, skill, and caution. The Foundation has delegated the investment management authority it might otherwise have to the Manager in the good faith belief that the Manager will achieve the objectives set forth in this IPS. The CDFW has approved this delegation and has reserved the right to request and/or approve future delegation(s) to other investment managers of the day-to-day management and investment of the Endowment Funds.

Overall Objectives

This IPS is designed to:

- Establish appropriate **risk and return objectives** in light of the risk tolerance and the indefinite investment time horizon for the Endowment.
- Establish **asset allocation guidelines** and suitable investments for the Endowment, consistent with the risk and return objectives of this IPS.
- Provide a framework for **ongoing monitoring** of investment performance of the Endowment.

Risk and Return Objectives

Return Objectives. The overall objective with respect to the investment of Endowment Funds hereunder is to generate a level of financial support sufficient to pay the annual costs of long-term management for indefinite periods of time on parcels of real property secured or identified as "mitigation parcels" in connection with permits, authorizations, and other proceedings of the CDFW. It is the CDFW's expectation that these costs will be funded exclusively from the corresponding Endowment Funds deposited for each parcel and, thus, that no other funding sources will contribute to defraying these costs.

The CDFW calculates the principal amount of each tranche of Endowment Funds (each corresponding to an individual parcel of real property) using an assumed net annual drawdown rate of 3.50%. The CDFW has also assumed 3% annually as an estimate of long-term inflation and 1% annually as an estimate of the administrative costs of operating the Endowment. Accordingly, in investing Endowment Funds, the Manager will seek to attain an average nominal annual total return, net of any fees charged by the Manager or any underlying investment managers, of at least seven and one-half percent (7.50%) over the long term. This target average nominal annual return is referred to hereinafter as the "Return Goal."

This IPS is based on the assumption that the spending on a CDFW mitigation parcel for land management activities over the long term will average no more than 3.50% annually of the average market value of the parcel's corresponding Endowment Funds. This approach is intended to preserve the principal of the Endowment Funds to the extent practicable while generating a level of income that will be available to fund land management activities on the mitigation parcels. To the extent the CDFW deems it necessary or desirable to allow a spending level greater than that projected for any particular parcel (which projection will be based on an assumed annual spend rate of 3.50%), the likelihood will increase that investment earnings alone (both appreciation and income) on the corresponding Endowment Funds will be insufficient to fund management activities on the relevant parcel in perpetuity. Thus, a decision by the CDFW to allow a spending level greater than that projected for any particular parcel will decrease the statistical likelihood that the Endowment Funds for that parcel will exist in perpetuity.

In addition to using the Return Goal, the Committee will evaluate the Manager's performance on a relative basis by comparing it against market performance benchmarks and appropriate capital market measures, such as securities indices. The Manager's performance relative to these benchmarks and measures is referred to hereinafter as the "Relative Performance Goal." The Relative Performance Goal will be measured by comparing actual Endowment investment results over the current quarter — as well as over moving, annualized one, three, and five year time periods — against a weighted Endowment portfolio benchmark.

The weighted Endowment portfolio benchmark will be created by including in the benchmark appropriate indexed returns (e.g., Barclays Aggregate, S&P 500, etc.), pro rata, according to the asset class weightings in the Endowment's target allocation. The overall Endowment benchmark for a period may be adjusted if there are disparities in asset allocations during any single time frame caused by very large Endowment inflows or outflows and/or tactical allocations that would cause the benchmark to be inappropriate for the time period being examined.

Risk Objectives. The acceptable risk profile for the Endowment should generally be for the Manager to assume the lowest possible risk consistent with achieving the Return Goal. While negative returns in any single year may be unavoidable, over longer terms, the Manager should select asset allocations that are expected to achieve overall positive portfolio returns. In order to allow ongoing assessment and monitoring of portfolio risk, the Manager will prepare and present to the Committee at least annually a report on the overall risk profile of the portfolio based on the then-existing asset allocation thereof. This report will also be made available to the CDFW.

Risk can be construed to include multiple different outcomes including loss of principal, failure to meet an expected return, or, most commonly, volatility of investment returns around an expected mean (also known as "standard deviation"). The CDFW's policy regarding investment risk, consistent with modern portfolio theory and UPMIFA's express preference for diversification in endowment portfolios, is that risk cannot be eliminated but should be managed.

The Committee is delegating to the Manager the responsibility of understanding the risks inherent in the investment strategy selected to attempt to achieve the Return Goal, ensuring that the Endowment portfolio is properly compensated for these risks, measuring and monitoring those risks, and periodically communicating this risk information to the Committee and, to the extent requested, the CDFW. Most importantly, the level of overall Endowment portfolio risk taken should be consistent with the statistically-likely achievement of the overall Return Goal.

Asset Allocation Guidelines

General. Endowment Funds shall be invested in a diversified, balanced portfolio that may include fixed income instruments, equity instruments, real assets, alternative investments, and cash. The Endowment Funds may be invested in any combination of individual securities, separately managed accounts with investment managers, commingled funds, or mutual funds. In the case of investments by third-party investment managers, those managers will have full discretion over their own portfolio management decisions consistent with the guidelines provided by this IPS. In the case of investments in commingled funds and mutual funds, their management will be carried out within their respective structures and in accordance with their applicable prospectus materials.

The specific asset allocations within the Endowment portfolio, including necessary or appropriate rebalancing among the asset classes from time to time, will remain the responsibility of the Manager, exercising reasonable judgment in light of prevailing market conditions and the objectives of this IPS, including the permissible asset allocation ranges that follow.

Asset Allocation Ranges. The permissible asset allocation ranges for the asset classes in which the Manager will invest the Endowment, consistent with the overall risk and return objectives of this IPS, are as follows:

Asset Class	Minimum	Target	Maximum	Benchmark
Total Equity	**45%**	**62%**	**75%**	**MSCI ACWI**

Representative sub-classes within this asset class include, without limitation, Domestic Equity, International Equity, Emerging Markets Equity, Private Equity, and "Directional" Hedge Funds

Total Fixed Income	**10%**	**23%**	**35%**	**Barclays Aggregate**

Representative sub-classes within this asset class include, without limitation, Cash, Core Bonds, Global Sovereign Debt, High Yield Debt, and "Relative Value" Hedge Funds

Real Assets	**0%**	**15%**	**30%**	**Weighted Real Assets Composite***

Representative sub-classes within this asset class include, without limitation, Infrastructure/Master Limited Partnerships, Natural Resources, and Real Estate.

* Weighted Real Assets Composite, 33% NCRIEF ODCE, 33% S&P Large/Mid Natural Resources Index, 34% Brookfield Infrastructure

1. The primary purpose of the equity and real asset portion of the Endowment portfolio is to provide the potential for growth of principal and protect the purchasing power of the portfolio.
2. The equity and real asset portion should normally represent approximately 77% of the total Endowment assets. It is recognized that the equity and real asset portion entails the assumption of greater risk from market variability.
3. The primary purpose of the fixed income portion is to provide a deflation hedge and to reduce overall volatility in the portfolio.
4. The fixed income portion should normally represent approximately 23% of the total Endowment assets. This ratio may be changed from time to time to take advantage of variations in market conditions. Variances from the 77%/23% ratio of equity to fixed income may occur as the Manager brings the portfolio into balance or attempts to capitalize upon valuation shifts in the market.
5. Although cash is recognized as an asset class hereunder, Endowment Funds will generally be fully invested at all times and cash will generally be held only to meet liquidity needs or during the portfolio rebalancing process.
6. The ratios above are targets for the allocation of Endowment Funds to the various asset classes. Actual allocation of Endowment Funds among the asset classes will vary based upon market conditions and the Manager's exercise of discretion in attempting to best meet the objectives of this IPS.
7. Endowment Funds will be diversified both by asset class and within these asset classes as noted above. The fixed income portion will typically be diversified with regard to credit, maturity, and sector. The equity and real asset portion will typically be diversified by sector, industry, asset type, and market capitalization. These added elements of diversification will have the goal of preventing any single security, sector, or asset type from having a disproportionately large impact on the performance of the total Endowment portfolio.

Guidelines for Equities and Real Assets

1. The equity and real asset portion will be diversified over sectors, industries, assets, and size of organizations. In no event and at no time will the securities of any one issuer exceed 5% at cost and 8% at market of the total Endowment portfolio.
2. Decisions regarding sectors, industries, asset types, or specific securities will be left to the discretion of the Manager, who will exercise care and diligence in discharging its fiduciary responsibility.
3. Performance will be monitored (including up to quarterly evaluation of core managers) on a regular basis and evaluated over a rolling three-year period.

Guidelines for Fixed Income

1. The Manager should employ active management techniques with respect to the fixed income portion of the Endowment portfolio but changes in the average maturity of fixed income instruments should be moderate and incremental. The Manager should discuss liquidity needs with the Committee as appropriate.
2. The fixed income portion should be diversified such that the securities of any one issuer, with the exception of the United States Government or its agencies, are limited at any time to 5% at cost and 8% at market of the total portfolio. Further, fixed income securities should generally be of investment grade. The use of high yield bonds is permitted, provided such bonds are held within a commingled fund or mutual fund and used to further diversify the Endowment portfolio. However, no more than 10% (at market) of the total Endowment portfolio may be allocated to high yield bonds. If a security already held in the portfolio is downgraded, the Manager will evaluate it carefully to determine whether the security should be kept in the portfolio or eliminated within a prudent time frame.
3. Performance will be monitored on a regular basis and evaluated over a rolling three-year period.

Guidelines for Cash

1. The Manager will periodically discuss liquidity needs with the Committee.
2. Beyond cash needed for liquidity purposes, the cash portion will be included or excluded at the discretion of the Manager in seeking to achieve the objectives of this IPS.

Ongoing Monitoring

Performance Objectives

1. The benchmark objective for the asset classes will be as follows:

   Equities: MSCI All Country World Index

   Fixed Income: Barclays Aggregate

   Real Assets: Weighted Real Assets Composite, 33% NCRIEF ODCE, 33% S&P Large/Mid Natural Resources Index, 34% Brookfield Infrastructure

2. The benchmark objectives for the individual investment strategies are defined in the asset allocation table above.
3. With respect to each individual asset class, performance will also be measured by a benchmark objective that total return rank above the 50th percentile against a universe of similar funds.
4. All benchmarks and objectives will apply to a three-year rolling period.

Guidelines for Transactions

As a general guideline, all transactions shall be entered into on the basis of the best execution which is interpreted to mean the best realized price.

Monitoring salinity levels along the ditching network in the Alligator River National Wildlife Refuge, NC. © The Nature Conservancy (Erika Nortemann)

Monitoring of Objectives and Results

1. All objectives and policies set forth in this IPS remain in effect until modified by the CDFW in consultation with the Committee. The Committee will promptly communicate any such modifications to the Manager in writing.
2. If the Manager believes that the policies or guidelines inhibit the investment performance or are otherwise inconsistent with any objectives set forth in this IPS, it is the responsibility of the Manager to so notify the Committee.
3. This IPS shall be reviewed at least annually by the Committee with the Manager. The Endowment portfolio will be monitored on a continual basis for consistency in asset allocation and return objectives. Asset concentrations will also be monitored for exposure to sectors, industries, and individual securities, notwithstanding the fact the Manager is responsible for investment decisions. The CDFW and the Committee may evaluate the Manager to ensure that the factors underlying the performance expectations remain in place.
4. The Manager will report on the following to the Committee quarterly with respect to both the Endowment as a whole and each parcel-specific sub-account within the Endowment:
    a. Current holdings at cost and market
    b. Purchases and sales during the period being reported
    c. Additions and withdrawals during the period being reported
    d. Total return net of commissions and fees
    e. Changes in staff or ownership of the Manager to the extent these changes potentially impact the ability of the Manager to fulfill its duties hereunder

The Nature Conservancy

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